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# MEASURES OF SOVIET GROSS NATIONAL PRODUCT IN 1982 PRICES

## A STUDY

PREPARED FOR THE USE OF THE

## JOINT ECONOMIC COMMITTEE
## CONGRESS OF THE UNITED STATES

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# LETTER OF TRANSMITTAL

November 9, 1990

*To the Members of the Joint Economic Committee:*

Transmitted herewith for use by the Joint Economic Committee, Congress, and the interested public is a study of the Soviet Gross National Product prepared for the committee by analysts of the Central Intelligence Agency.

The study measures the size of the Soviet economy in rubles based on 1982 prices, and updates earlier CIA estimates which were based on 1970 prices. The estimates in this study are intended to show the structure and growth of the Soviet economy in constant ruble prices, covering the period 1950-1987. The methods currently used by the CIA to estimate Soviet GNP are explained along with changes in the methods adopted in recent years.

The Joint Economic Committee is pleased to publish this study in the hope that it will add to our understanding of the Soviet economy as well as to our understanding of the way the U.S. intelligence community approaches the subject. The author of the study is Laurie Kurtzweg, an analyst with the CIA. The project was supervised for the Joint Economic Committee by Richard F Kaufman.

It should be understood that the views and conclusions contained in the study are those of the CIA and not necessarily those of the Joint Economic Committee or individual members.

Sincerely,

Lee H. Hamilton
Chairman
Joint Economic Committee

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# Measures of Soviet Gross National Product in 1982 Prices

## Summary

Western estimates of the size and growth of gross national product (GNP) in the USSR were first developed several decades ago, largely as a result of skepticism about the reliability of official Soviet summary statistics. These independent estimates remain necessary to remedy the shortcomings of such official measures. This paper describes the methods currently used by the Central Intelligence Agency (CIA) to estimate Soviet GNP and presents our latest numerical estimates—including an update of the ruble price base from 1970 to 1982. In addition, problems of estimation are discussed and the reliability of the results is assessed.

**Methods of Estimation**

The CIA's estimates of Soviet GNP are based on the same concept used in the United States and other Western countries: the total value of goods and services sold to final purchasers during a given period of time. Our initial estimates of GNP, like official Soviet statistics, are valued in established prices—that is, prices set or authorized by central officials. These prices, however, have deficiencies that prevent them from reflecting the allocation of economic resources accurately, so we convert them to adjusted factor costs. In the conversion process, we subtract turnover and other indirect taxes—which sharply raise selected prices, mainly of alcohol and manufactured consumer goods—and add subsidies—which keep other prices artificially low, especially for food and basic consumer services. Next, because the profit margins included in established prices are often arbitrary, reported profits are removed from GNP. Finally, a calculated return on capital—at a rate currently assumed to be 12 percent—is added back in an effort to reflect the productivity of capital in the economy.

We estimate the growth of total GNP as an average of indexes of the growth of its components weighted by their base-year values at adjusted factor cost. The growth of each component is estimated using a sample of output, which may be based on two major kinds of Soviet data:

- Data on quantities of output in physical units—such as tons, items, or square meters—which are multiplied by base-year prices to obtain values.
- Data on values of output in prices officially described as "comparable," which are supposed to measure output excluding the effects of price changes, as Western economic statistics in constant prices do.

Both kinds of data have shortcomings. Over the years, Western studies of Soviet quantity data have generally found them reliable as indicators of changes in the physical volume of output. Research on the measurement of real growth, however, has shown that data on physical quantities often do not capture the full extent of changes in product mix and quality. Also, in a variation on the use of physical output data, data on labor inputs—measured in work hours—are used to estimate the growth of a number of services for which no output statistics are available. These input data do not reflect increases in labor productivity.

Almost all Western experts, and now most Soviet economists, believe that value data in comparable prices overstate growth because they include a substantial degree of disguised inflation. This inflation has two main sources. First, producers benefit financially from making minor changes in familiar products and using these "improvements" as an excuse for increasing prices. When production of older, cheaper items is stopped at the same time, purchasers are left with little choice but to accept the new ones. Second, even products reflecting genuine improvements are assigned high prices at first to cover the research, development, and other costs of the initial stages of production. These prices are supposed to be reduced after a few years, but producers typically try to keep any reduction as small as possible and to postpone it as long as possible.

**Reliability of Estimates**

In the last few years, questions about the reliability of our estimates of Soviet GNP have been raised on two main fronts. Some Western researchers have focused on the potential understatement of growth resulting from our use of quantity data. Criticisms of official Soviet statistics by Soviet and Western economists, on the other hand, have called attention to potential overstatement in the value data we use in estimating growth—and possibly in some of the quantity data as well.

On balance, we believe that our estimates of total GNP growth are reasonably accurate, partly because errors in opposite directions offset each other to some extent. The growth estimates for certain components of GNP, however, are subject to greater potential bias—that is, consistent overstatement or understatement—than we would like:

- Machinery output growth probably is biased upward because the sample on which it is based includes a substantial share of Soviet value data.

- Growth of the machinery component of investment also is based on value data and is likely to be overstated.
- Housing growth is estimated on the basis of living space—without allowance for improvements in amenities—and is very likely to be biased downward.
- Growth estimates for education, health, and government administrative services almost certainly are understated because they are based on labor inputs, which do not reflect gains in productivity.

### Potential Impact of Changes in Soviet Statistics on GNP Estimates

The availability of detailed economic data, such as those used in estimates of GNP growth, has improved under General Secretary Gorbachev's policy of *glasnost*. Nonetheless, *glasnost* has not eliminated the need for estimates that do not depend on official Soviet summary statistics. As recent Soviet critics have reminded us, often with striking illustrations, those statistics continue to be valued in prices that do not accurately reflect the costs of economic resources and that include a substantial degree of disguised inflation.

Meanwhile, the Soviet statistical system is under increasing pressure to collect new kinds of data and to improve the measures of economic performance derived from both new and existing data. Such changes may eventually improve the reliability of many official statistics. In the interim, however, users will need to watch closely for changes in definition and coverage and probably adapt to the replacement of familiar measures by new ones.

# Measures of Soviet Gross National Product in 1982 Prices

> *The measurement of national income, it has been said, is an art rather than a science. If this is so (and few practitioners would disagree), for Russian national income it may be felt the art must even assume an occult character. Is it really worth while to attempt such measurements in this case? . . . Great as the difficulties are, they do not appear to be overwhelming. With sufficient care and industry, it should be possible to limit the range of conjecture, and even uncertain knowledge may be highly valuable on a vital theme.*
>
> Abram Bergson
> *The Real National Income of Soviet Russia Since 1928*

## Introduction

The purpose of this paper is to describe the methods currently used by the Central Intelligence Agency (CIA) in its estimates of Soviet gross national product (GNP), especially methods that have changed since our last comprehensive publication on the subject (henceforth, *USSR: Measures*).[1] The latest estimates—including an update of the ruble price base from 1970 to 1982—also are presented.[2]

Since the publication of *USSR: Measures*, questions have been raised—directly and indirectly—about the reliability of our GNP estimates. Recent criticisms of official Soviet statistics by Soviet and Western economists have called attention to the possible impact of deficiencies in some of the Soviet data we use. In addition, several Western researchers have questioned various aspects of our estimation methods. We hope this paper's exposition of methods and discussion of problems of estimation, which address these issues, will encourage further comments and suggestions for improvements.

The main body of this paper begins with a brief review of the rationale for and the results of our current estimates of Soviet economic growth. The major trends shown by GNP estimates in 1982 prices are summarized, and differences from estimates in 1970 prices—generally small—are noted. Next, our methods of estimating Soviet GNP are described, including procedural changes connected with the new price base. The essentials of methods already covered in *USSR: Measures* are summarized for the convenience of the reader, but details discussed there are not addressed in this paper. This description of estimation methods is followed by a discussion of the degree of confidence we place in the growth estimates. Criteria for reliable estimates of economic growth are reviewed, and the extent to which CIA estimates satisfy these criteria is evaluated. Finally, the potential impact of ongoing changes in Soviet statistics on our GNP estimates is discussed.

## Soviet Economic Development in a Western Perspective

For decades Western researchers have been skeptical of the reliability of official Soviet summary statistics; independent Western estimates of GNP are designed to remedy some of the shortcomings of these official figures (see inset). One of the major shortcomings is the presence of disguised inflation in measures that should reflect real economic growth—that is, exclude the effects of price changes. This problem is avoided whenever possible by using detailed production data—usually in physical units—to track changes in output. GNP also is revalued in an effort to correct some of the distortions of established prices—that is, prices set or authorized by Soviet officials. The resulting values—called adjusted factor costs (or simply factor costs)—reflect the distribution of labor and capital resources more accurately than established prices do. Traditional Soviet aggregate measures, moreover, have omitted depreciation and services—except those that contribute directly to output of material goods. GNP estimates by Western economists—and now also by Soviet statisticians (see inset)—include depreciation and services.

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[1] Joint Economic Committee, Congress of the United States, *USSR: Measures of Economic Growth and Development, 1950-80* (Washington: US Government Printing Office, 1982). The volume consists of chapters by John Pitzer on GNP overall, by Ray Converse on industrial production, by Barbara Severin and Margaret Hughes on agricultural production, and by Gertrude E. Schroeder and M. Elizabeth Denton on consumption.

[2] The GNP estimates in this paper reflect the structure and growth of the Soviet domestic economy in constant ruble prices. The CIA also uses dollar prices—along with ruble prices—to compare the size of Soviet GNP with that of GNP in the United States and other Western countries. For discussions of GNP comparisons, which are outside the scope of this paper, see Imogene Edwards, Margaret Hughes, and James Noren, "U.S. and U.S.S.R.: Comparisons of GNP," in Joint Economic Committee, Congress of the United States, *Soviet Economy in a Time of Change* (Washington: US Government Printing Office, 1979); and Gertrude E. Schroeder and Imogene Edwards, *Consumption in the USSR: An International Comparison*, prepared for the Joint Economic Committee of Congress (Washington: US Government Printing Office, 1981).

To measure the real growth of Soviet GNP, quantities of output produced in a series of years are valued at prices of a fixed base year. This base year should be close enough to the present so that prices approximate current trade-offs between competing uses of economic resources. When we began work on a new price base (1982), our previous base year (1970) was becoming outdated. Major changes had occurred in the relationships among Soviet prices:

- Industrial prices were revised on 1 January 1982, following less comprehensive changes in the mid-1970s.
- Agricultural prices were increased several times, starting in the late 1970s.
- Construction prices were raised on 1 January 1984, in order to incorporate the new industrial prices.

The shift to a 1982 price base captures the new industrial prices and all of the price increases in agriculture except the last ones in 1983, but not the new construction prices.

## Major Trends in GNP in 1982 Prices

Although the new price base has changed our numerical estimates of GNP growth—generally by small amounts—it has not altered our perception of the major patterns of economic development in the

### *Western Estimates of Soviet GNP*

*Research on Soviet GNP was pioneered by Abram Bergson in the 1940s and developed by him and his colleagues under the sponsorship of the RAND Corporation during the 1950s and 1960s.*[a] *Bergson's initial work involved estimating GNP in current established prices and adjusting those estimates in an effort to correct some of the distortions of the Soviet pricing system. His adjusted factor cost values were intended to reflect the costs of labor and capital resources used in the economy—the factors of production—better than established prices could. Subsequently, RAND scholars estimated price indexes that were used to derive measures of GNP growth in constant prices. Bergson also has used these building-block studies of GNP as a basis for comparing levels of economic activity in the USSR and other countries and for analyzing Soviet productivity.*

*After the RAND Corporations's research on Soviet GNP concluded in the late 1960s, the CIA—where classified work on the subject began in the early 1950s—became the principal source of Western estimates. Recent CIA efforts have concentrated largely on constant price measures of Soviet economic growth, although Soviet GNP in current prices also is estimated for selected years. Because of changes in the availability of data, our present approach to estimating growth differs from that used by Bergson and his associates in two major ways. First, we primarily use data on changes in quantities of output weighted by base-year values, rather than data on changes in current values of output deflated by price indexes. Second, our estimates of the growth of total GNP are determined as a weighted average of growth rates estimated for industry and the other sectors in which GNP is produced. In contrast, in the Bergson-RAND approach, total GNP growth was a weighted average of estimates of the growth of purchases for consumption and other uses of GNP.*

[a] *The RAND studies are summarized by Bergson in* The Real National Income of Soviet Russia Since 1928 *(Cambridge, Mass.: Harvard University Press, 1961), pp. vii-ix; and by Abraham Becker in* Soviet National Income, 1958-1964 *(Berkeley and Los Angeles: University of California Press, 1969), pp. 1, 578.* USSR: Measures *(pp. 11-12, 26) also discusses estimates of Soviet GNP by RAND Corporation and other researchers outside the CIA.*

### *New Soviet Official Statistics on GNP*

*Official Soviet measures of aggregate economic performance, because they are based on Marxian concepts, have long excluded depreciation and services that do not contribute directly to output of material goods. The traditional measures are often called net material product (NMP) to indicate these exclusions. Early in 1987, however, the Soviet State Committee for Statistics began publishing estimates of GNP—as the measure is defined by Western economists—in recent years.*[a] *So far, these Soviet GNP statistics have been derived by adding depreciation and nonmaterial services to NMP. Work on developing more detailed GNP estimates is under way.*

*From the Soviet estimates of GNP released so far, the official value of total GNP in current established prices appears a little lower than CIA estimates. The new Soviet statistics on GNP growth, however, are subject to about the same extent of disguised inflation as traditional NMP growth statistics (see table). Because GNP is presently derived from NMP, this is not surprising.*

*Percent*

| | *Average Annual Growth 1981-85* | *Annual Growth* | |
|---|---|---|---|
| | | *1986* | *1987* |
| *GNP* | | | |
| *Soviet* | *4.0* | *4.6* | *3.3* |
| *CIA* | *1.8* | *4.0* | *1.3* |
| *NMP* | | | |
| *Soviet* | *3.6* | *4.1* | *2.3* |
| *CIA* | *1.6* | *3.5* | *1.4* |

[a] *Official GNP figures were first released in the yearend report on 1987 economic performance; see* Pravda *(24 January 1988). Estimates for additional years are published in the short statistical yearbook presenting data through 1988; see* SSSR v tsifrakh v 1988 godu *(USSR in Figures in 1988) (Moscow: Finansy i statistika, 1989), pp. 5, 9, 14. Soviet methods of estimating GNP are discussed in "Metodika ischisleniya valovogo natsional'nogo produkta SSSR" (Methods of Calculating the Gross National Product of the USSR),* Vestnik statistiki *(No. 6, 1988): pp. 30-42; and Yu. Ivanov, B. Ryabushkin, and M. Eydel'man, "Ischisleniye valovogo natsional'nogo produkta SSSR" (Calculating the Gross National Product of the USSR),* Vestnik statistiki *(No. 7, 1988): pp. 32-38.*

USSR. This stability of the estimates indicates that the price changes that occurred between 1970 and 1982 were not sharp enough to lead to substantial differences in the relative importance of the detailed output data on which GNP growth depends.

***Slowdown of Economic Growth.*** The Soviet economy has made substantial gains since the end of World War II, but its growth has slowed—gradually at first and more sharply in the last decade. Total GNP—measured in constant 1982 prices—roughly quadrupled from 1950 to 1987. Annual rates of increase in GNP averaged slightly more than 4.5 percent from 1950 to 1975 but fell to about 2 percent from 1975 to 1987 (see table 1 and figure 1).[3] Although there have been improvements in the functioning of some parts of the economy since the final Brezhnev years, it is too early to predict the effects on GNP growth of General Secretary Gorbachev's efforts to reform the economic system, which are just beginning.

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[3] All estimates are subject, in varying degrees, to errors and uncertainties that are discussed below, in the section, "Reliability of Estimates of Growth." In the present section, estimates are valued at 1982 factor cost, rather than in Soviet established prices.

See appendix A for tables of GNP estimates from 1950 through 1987. These tables show the major components of GNP by sector of origin—such as industry, agriculture, and services—and by end use—such as consumption, investment, and government spending, including defense.

## Table 1
## USSR: GNP Growth by Sector of Origin, 1951-87 [a]

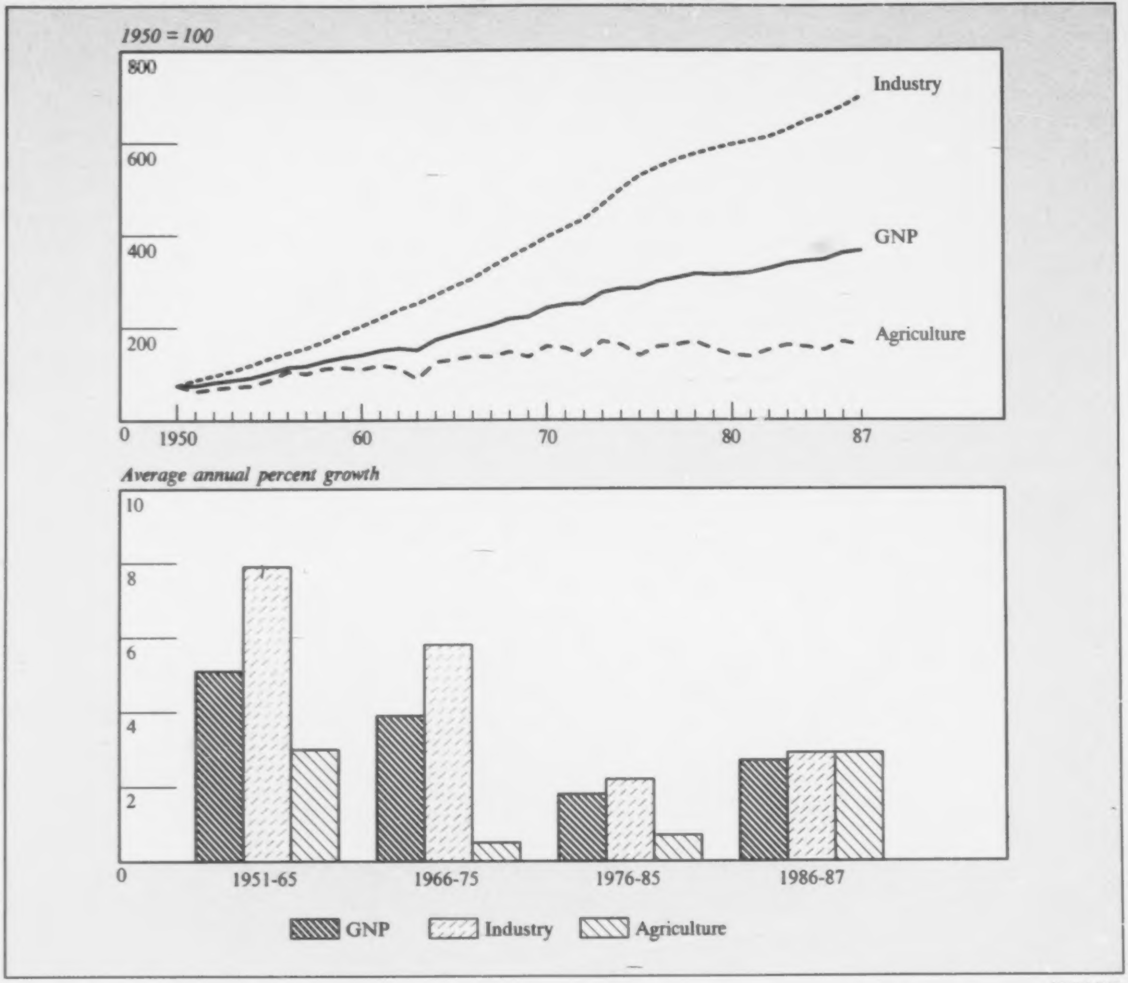
*Percent*

| | 1951-65 [b] | 1966-75 [b] | 1976-80 [b] | 1981-85 [b] | 1986 | 1987 |
|---|---|---|---|---|---|---|
| **Total GNP** | **5.1** | **3.9** | **1.9** | **1.8** | **4.0** | **1.3** |
| **Industry** | **7.9** | **5.8** | **2.4** | **2.0** | **2.7** | **3.1** |
| Ferrous metals | 8.8 | 4.7 | 1.0 | 0.8 | 3.3 | 1.6 |
| Nonferrous metals | 8.9 | 6.7 | 1.5 | 2.0 | 3.0 | 1.9 |
| Fuel | 8.4 | 5.3 | 3.1 | 0.9 | 3.5 | 1.9 |
| Electric power | 12.0 | 7.5 | 4.5 | 3.1 | 3.6 | 4.1 |
| Machinery | 7.3 | 6.7 | 3.0 | 2.0 | 2.9 | 3.7 |
| Chemicals | 11.0 | 8.3 | 3.0 | 3.8 | 4.8 | 2.6 |
| Wood, pulp, and paper | 5.1 | 2.6 | −0.4 | 1.9 | 4.6 | 4.5 |
| Construction materials | 12.2 | 5.7 | 0.9 | 1.8 | 4.0 | 3.4 |
| Light industry | 6.2 | 4.5 | 2.4 | 1.6 | 1.4 | 1.7 |
| Food industry | 8.4 | 5.0 | 1.4 | 1.8 | −4.9 | 3.6 |
| Other industry | 7.9 | 5.8 | 2.4 | 2.0 | 2.7 | 3.1 |
| **Construction** | **8.8** | **4.8** | **0.1** | **1.1** | **3.8** | **2.4** |
| **Agriculture** | **3.0** | **0.5** | **0.2** | **1.2** | **10.3** | **−4.0** |
| **Transportation** | **11.5** | **6.8** | **3.6** | **2.2** | **3.0** | **1.2** |
| **Communications** | **7.7** | **7.5** | **4.7** | **3.9** | **5.5** | **6.8** |
| **Trade** | **7.8** | **5.9** | **2.7** | **1.8** | **0.4** | **2.1** |
| **Services** | **3.6** | **3.7** | **2.6** | **2.2** | **2.2** | **3.2** |
| Housing | 3.8 | 2.8 | 2.1 | 2.6 | 2.7 | 2.9 |
| Utilities | 7.5 | 5.3 | 4.9 | 4.9 | 4.4 | 4.2 |
| Repair and personal care | 5.0 | 6.0 | 4.8 | 3.9 | 4.0 | 7.0 |
| Recreation | 8.7 | 3.0 | 1.2 | 1.2 | −0.3 | 0.8 |
| Education | 3.9 | 3.0 | 2.2 | 1.5 | 2.3 | 3.0 |
| Health | 4.4 | 3.1 | 1.4 | 1.7 | 1.5 | 3.0 |
| Science | 9.3 | 6.2 | 3.4 | 1.5 | 1.3 | 3.3 |
| Credit and insurance | 0.4 | 5.7 | 4.3 | 0.8 | −1.3 | 0.6 |
| Government administration | 1.6 | 4.4 | 2.9 | 1.5 | 1.5 | 1.7 |
| **Military personnel** | **0.5** | **2.6** | **1.6** | **0.9** | **0.4** | **0.0** |
| **Other branches** | **5.1** | **3.9** | **1.9** | **1.8** | **4.0** | **1.3** |

[a] Based on value added at 1982 factor cost.

[b] Average annual. In this and the following tables, average annual rates of growth are calculated as compound rates of change from the year immediately before the start of the period specified to the last year of the period.

**Figure 1**
**USSR: Trends in GNP and Industrial and Agricultural Output, 1950-87**



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Industry, traditionally a major source of growth in the Soviet economy, contributed heavily to the slide in GNP growth during the past decade. Average annual rates of increase in industrial production fell from 5.8 percent during 1966-75 to 2.1 percent in 1976-82 but picked up slightly in 1983-87.

The decadelong slowdown of growth has frustrated Moscow's efforts to overtake the United States in the production of goods and services. Soviet GNP, which rose from roughly 35 percent of the US level in 1950 to nearly 60 percent in 1975, currently is about 55 percent of US GNP.[4] The USSR's progress toward achieving Western standards of living also has stalled in the last decade, although it has maintained its status as a military superpower.

***Competition for Resources.*** Competition intensified among the major claimants on GNP—investment, defense, and consumption—as Soviet economic growth slowed after the mid-1970s. Through 1987, however, Moscow's priorities appeared to change little, as the shares of GNP allocated to these claimants remained much the same—in current prices—after 1970.[5]

Planners allowed the rate of investment growth to slow markedly after 1975. Annual rates of increase in investment slipped from an average of 4.8 percent per year during 1966-75 to 2.4 percent during 1976-85. Gorbachev's modernization campaign raised investment growth in 1986, but the faster pace was not sustained in 1987 (see table 2). Rates of increase in the machinery component of investment also declined as the growth of machinery output fell, even though imports helped cushion the impact on investment of shortfalls in domestic production.

The growth of defense spending decreased from an average of about 5 percent per year from 1965 to 1975 to less than 2 percent annually from 1975 to 1987, roughly paralleling the slowdown in overall economic growth. This trend in defense outlays reflected primarily a leveling off in procurement of weapons (currently about half of all military expenditures) during the late 1970s and early 1980s. Still, the share of defense spending in GNP rose slightly—when both are measured in current prices—as prices of military output increased faster than prices of civilian goods.

The standard of living of the population continued to rise, but the rate of improvement slowed markedly after 1975. Annual growth of per capita consumption averaged 1.3 percent during 1976-87, down from 3.3 percent during 1966-75. As a result, the level of per capita consumption in the USSR fell further behind that in the United States and other major Western countries.

Soviet food consumption grew more slowly than consumption of services and other goods. Although this is typical in countries with rising standards of living, improvements in the availability of foodsupplies were disappointing nonetheless. Continuing problems in agriculture affected consumers, as poor harvests depressed gains in consumption of food (after a lag of a year or two). In fact, until Gorbachev began his campaign against drinking in 1985, alcoholic beverages registered some of the fastest increases in food consumption (including beverages). In 1986-87, however, the impact of a sharp drop in alcohol supplies was softened by substantial increases in consumption of food other than beverages.

### Results of Move to New Price Base

The shift in the price base for our GNP estimates implies that the Soviet economy experienced inflation at an average rate of a little over 2 percent per year between 1970 and 1982. This rate is calculated by dividing the current value of total GNP in 1982 by the same quantity of output valued in 1970 prices and computing the average annual rate of change in the resulting price index.

In addition, our estimates of Soviet GNP growth in 1982 prices differ in two important ways from estimates in 1970 prices. First, rates of real growth are lower for total GNP and most major components. This result, which reflects the "index number effect," is to be expected when prices of a more recent year

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[4] These ratios represent the geometric mean of a comparison using US market prices (dollars) as weights and another comparison using Soviet established price weights (rubles). The base year for both the dollar and the ruble price weights is 1982. Each country's GNP appears smaller when weighted by its own prices because each produces relatively larger quantities of goods that are relatively cheaper in terms of its own resources. Comparisons in both sets of prices are valid, but the geometric mean provides a convenient single estimate of proportion. See CIA Reference Aid, *Handbook of Economic Statistics, 1988* (CPAS 88-10001, September 1988), p. 32.

[5] Priorities in allocating resources are assessed using GNP valued at current factor cost—rather than the constant 1982 values used in estimating growth—because decisions about spending generally reflect the resource trade-offs in effect at the time. Factor cost values are used because they give a more accurate picture of the relative costs of economic resources than established prices do.

**Table 2**
**USSR: GNP Growth by End Use, 1951-87** [a]

*Percent*

| | 1951-65 [b] | 1966-75 [b] | 1976-80 [b] | 1981-85 [b] | 1986 | 1987 |
|---|---|---|---|---|---|---|
| **Total GNP** | **5.1** | **3.9** | **1.9** | **1.8** | **4.0** | **1.3** |
| **Consumption** | **4.6** | **4.4** | **2.5** | **2.0** | **1.7** | **2.7** |
| Consumer goods | 4.4 | 4.6 | 2.4 | 1.8 | 1.3 | 2.3 |
| Food | 3.8 | 3.8 | 1.5 | 1.3 | −0.9 | 1.7 |
| Animal products | 4.2 | 4.6 | 1.3 | 1.8 | 2.2 | 3.7 |
| Processed foods | 7.9 | 3.4 | 3.5 | 1.2 | 4.2 | 5.8 |
| Basic foods | 1.5 | 1.3 | 0.8 | 2.0 | 5.4 | −0.3 |
| Beverages | 7.8 | 6.0 | 2.6 | −1.9 | −30.6 | −10.3 |
| Soft goods | 7.1 | 5.9 | 3.7 | 2.2 | 3.2 | 1.3 |
| Durables | 12.3 | 10.6 | 6.3 | 3.9 | 11.6 | 6.5 |
| Consumer services | 5.0 | 4.0 | 2.7 | 2.5 | 2.5 | 3.4 |
| **Investment** | **9.6** | **4.8** | **2.1** | **2.6** | **5.4** | **1.2** |
| New fixed investment [c] | 9.5 | 4.8 | 1.7 | 2.8 | 6.6 | 0.6 |
| Machinery and equipment | 11.5 | 8.2 | 6.5 | 4.6 | 6.9 | 1.3 |
| Construction and other | 8.4 | 4.9 | −1.1 | 1.7 | 4.9 | 2.9 |
| Capital repair | 10.3 | 4.8 | 3.9 | 2.1 | 1.2 | 3.6 |
| **Other government outlays** | **2.4** | **1.4** | **−0.7** | **−1.1** | **11.2** | **−4.1** |
| Government administration | −1.6 | 4.4 | 2.9 | 1.5 | 1.5 | 1.7 |
| Research and development | 9.3 | 6.2 | 3.4 | 1.5 | 1.3 | 3.3 |
| Outlays n.e.c. [d] | 2.7 | −0.3 | −3.3 | −3.5 | 21.5 | −9.8 |

[a] Based on 1982 factor cost.
[b] Average annual.
[c] Besides the line items shown, new fixed investment includes net additions to livestock, for which growth is not shown because swings between negative and positive values make rates of change difficult to interpret.
[d] In this and the following tables, n.e.c. is the abbreviation for not elsewhere classified.

are used to calculate growth rates (see inset). In converting estimates of US GNP from 1972 prices to 1982 prices, for example, the Department of Commerce found lower rates of growth for the United States when later-year prices were used. Second, shares of key components in GNP have changed because these components experienced different rates both of real growth and of price change.

Shifting the price base from 1970 to 1982 has reduced annual rates of increase of GNP by a few tenths of a percentage point in the 1980s (see table 3). The differences are a little larger—more than half a percentage point—in the 1970s. Like real growth rates of total GNP, rates estimated for most key producing sectors are also lower when the new price base is used, although there are exceptions.

The shares of Soviet GNP originating in the two largest producing sectors—industry and agriculture—have changed as a result of the shift to a new price

### *The "Index Number Effect"*

*Measured economic growth is likely to be lower, the more recent the price base used in the calculation. Consider an example, in which we are to estimate real growth in the output of precision instruments—a group of products ranging from clocks to automation equipment to computers. Depending on the base year chosen, the relative prices of individual products in this group will differ because of differences in technology, scale of production, and input costs. In particular, the prices of the products whose quantities are growing fastest—like computers—tend to fall relative to other prices because of more rapid gains from advances in technology and economies of scale. Moreover, purchasers of precision instruments attempt to increase their use of products that are becoming relatively cheaper—to the extent possible, given the inflexibility and chronic shortages of the Soviet supply system.*

| *Product* | *1970 Price* | *1970 Quantity* | *1982 Price* | *1982 Quantity* |
|---|---|---|---|---|
| *Clocks* | *10* | *200* | *20* | *300* |
| *Automation equipment* | *20* | *100* | *30* | *250* |
| *Computers* | *30* | *50* | *35* | *200* |

*Therefore, the fastest growing products will have smaller weights—and hence less impact on average growth of the group—when the prices of a later base year are used to calculate real output than they would if an earlier base year were used.*

| *Price Weights* | *Quantity Index (1970 = 100)* |
|---|---|
| *1970* | $\frac{(10x300) + (20x250) + (30x200)}{(10x200) + (20x100) + (30x50)} = \frac{14000}{5500} = 255$ |
| *1982* | $\frac{(20x300) + (30x250) + (35x200)}{(20x200) + (30x100) + (35x50)} = \frac{20500}{8750} = 234$ |

**Table 3**
**USSR: GNP Growth in 1970 and 1982 Prices, 1951-84** [a]

*Percent average annual rates*

| | 1951-60 | 1961-70 | 1971-80 | 1981-84 |
|---|---|---|---|---|
| **Total GNP** | | | | |
| 1970 | 5.6 | 5.2 | 3.2 | 2.4 |
| 1982 | 5.2 | 4.9 | 2.4 | 2.0 |
| **Industry** | | | | |
| 1970 | 9.2 | 6.5 | 4.7 | 2.8 |
| 1982 | 8.6 | 6.3 | 4.0 | 2.0 |
| **Construction** | | | | |
| 1970 | 11.2 | 5.5 | 3.7 | 1.9 |
| 1982 | 10.8 | 5.2 | 2.0 | 0.8 |
| **Agriculture** | | | | |
| 1970 | 3.8 | 3.2 | −0.9 | 2.7 |
| 1982 | 3.1 | 3.1 | −1.1 | 2.5 |
| **Transportation** | | | | |
| 1970 | 11.8 | 7.8 | 5.0 | 2.1 |
| 1982 | 12.3 | 8.5 | 5.1 | 2.2 |
| **Communications** | | | | |
| 1970 | 7.6 | 8.0 | 6.5 | 4.4 |
| 1982 | 7.9 | 8.0 | 5.5 | 3.7 |
| **Trade** | | | | |
| 1970 | 9.0 | 5.9 | 3.8 | 2.3 |
| 1982 | 9.3 | 6.0 | 3.7 | 1.9 |
| **Services** | | | | |
| 1970 | 2.8 | 4.2 | 3.1 | 2.1 |
| 1982 | 3.2 | 4.4 | 3.0 | 2.2 |
| **Military personnel** | | | | |
| 1970 | −4.3 | 3.8 | 1.9 | 0.2 |
| 1982 | −1.7 | 2.6 | 1.7 | 1.1 |
| **Other branches** | | | | |
| 1970 | 5.6 | 5.2 | 3.2 | 2.4 |
| 1982 | 5.2 | 4.9 | 2.4 | 2.0 |

[a] Based on value added at factor cost of the base year shown. Differences in growth rates reflect changes in methods of estimation—for example, in the procedures used to convert established prices to factor cost—as well as in the price base. The change in the price base, however, is generally the most important source of these differences.

**Table 4**
**USSR: Changes in Shares of Major Sectors of Origin as Result of Shift in Price Base, 1970-82** [a]

*Percent shares*

| | Estimates for 1970 | Estimates for 1982 | |
|---|---|---|---|
| | 1970 Prices | 1970 Prices | 1982 Prices |
| **Total GNP** | **100.0** | **100.0** | **100.0** |
| Industry | 32.0 | 36.8 | 32.4 |
| Construction | 7.3 | 7.6 | 7.8 |
| Agriculture | 21.1 | 14.3 | 20.6 |
| Transportation | 8.7 | 10.4 | 9.5 |
| Communications | 0.9 | 1.2 | 0.9 |
| Trade | 7.3 | 7.7 | 6.5 |
| Services | 20.5 | 20.2 | 20.1 |
| Military personnel | 1.9 | 1.6 | 1.9 |
| Other branches | 0.3 | 0.3 | 0.3 |

[a] Based on value added at factor cost of the base year shown. Differences in shares reflect changes in methods of estimation—for example, in the procedures used to convert established prices to factor cost—as well as in the price base. The change in the price base, however, is generally the most important source of these differences.

base (see table 4). The real growth of industry from 1970 to 1982 was faster than that of total GNP, as can be seen from the increase in industry's share of GNP with prices held constant (first and second columns of table 4, or table 3). On the other hand, inflation in industry was less than in the rest of the economy, as shown by the decline in industry's share of GNP in 1982 when the price base changes (second and third columns of table 4). In agriculture, in contrast, real output grew only slightly, but increases in resource inputs and in costs of producing farm output were steep.

## Methods of Estimation

In estimating Soviet GNP, the CIA attempts to replicate as closely as possible the measures familiar to users of the economic statistics of the United States and other Western countries. This attempt is complicated, however, by the Soviet government's traditional reluctance to divulge information readily available in the West. Even without this complication, differences in the statistical systems of planned and market economies would make it difficult to find for the USSR all of the same kinds of data that are published in Western countries. Soviet data are oriented primarily toward supplies of output by producers, for example, while many of the basic data for measures of US GNP reflect demands for output by consumers, investors, and other purchasers.

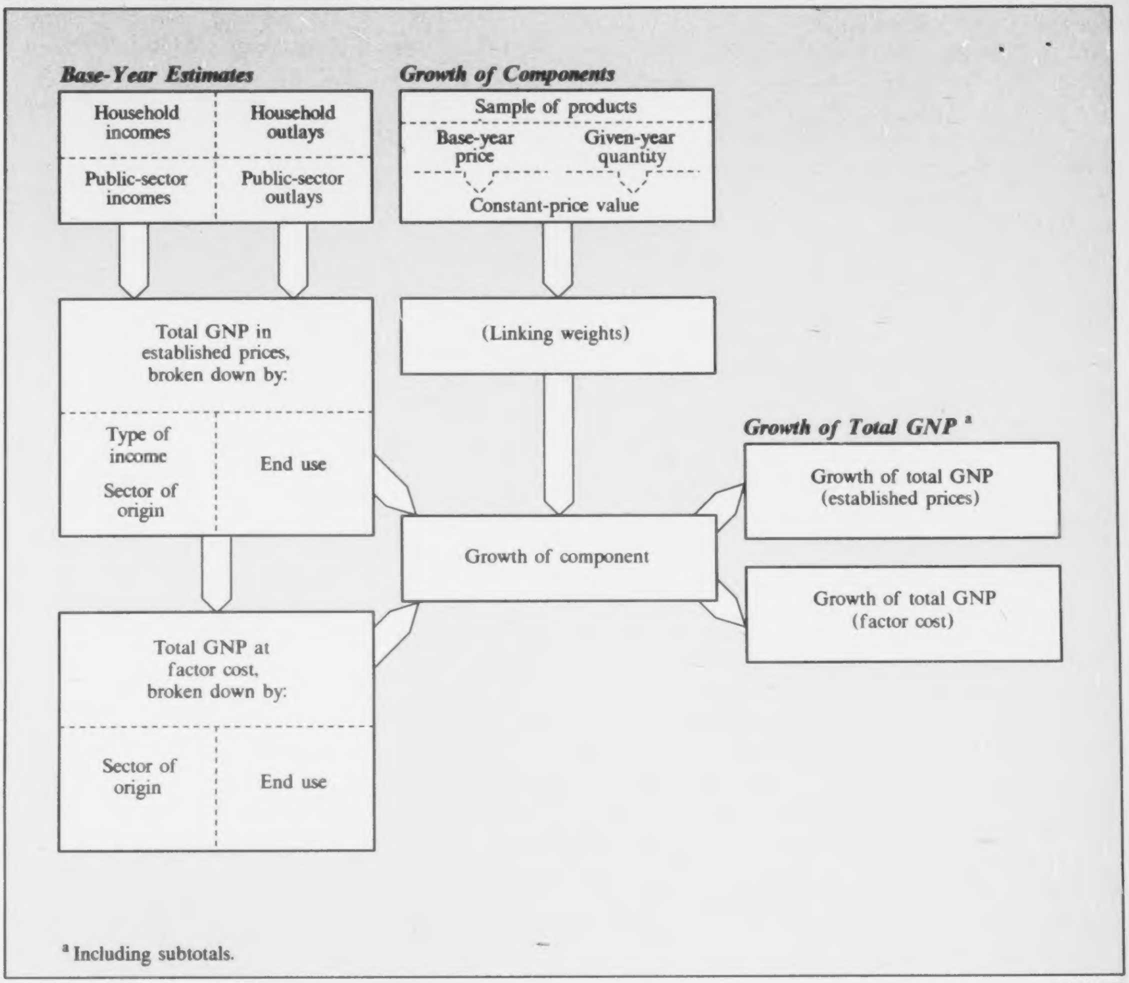
The essential features of our methods of estimating Soviet GNP in 1982 prices are summarized in this section. After an overview, the discussion proceeds along the lines illustrated in figure 2. The estimation of base-year GNP in established prices is described first, and our methods of adjusting these estimates to factor cost are outlined next—with special attention to revisions in earlier procedures. Then our methods of estimating GNP growth are reviewed. Because most of these methods have not changed since being described in detail in *USSR: Measures*, the discussion here is limited to those components for which estimates are based on new kinds of data and new procedures.

### Overview of Estimating Methods

The estimation of Soviet GNP involves two main stages: (1) developing a comprehensive set of estimates for the base year (1982) and (2) calculating growth indexes from data on changes in the components of GNP. The coverage of economic activity in the base year is as complete as possible; the growth estimates, however, depend on samples of products. The full detail of the base-year estimates is not updated annually because it requires painstaking searches of Soviet journals and monographs, which rarely provide data on an annual basis.

***Base-Year GNP.*** In estimating Soviet GNP, we start from the same concept used in the United States and other Western countries: the total value of goods and services sold to final purchasers during a given period of time. Following Western conventions, output is counted only once, at the time of final sale. Intermediate sales—for example, of iron ore, rolled steel, and automobile chassis—are excluded from GNP because the value of the products is reflected in subsequent sales to final purchasers—in this example, of automobiles.

Figure 2
Overview of Estimation of Soviet GNP


Base-Year Estimates
Household incomes
Household outlays
Public-sector incomes
Public-sector outlays
Growth of Components
Sample of products
Base-year price
Given-year quantity
Constant-price value
Total GNP in established prices, broken down by:
Type of income
Sector of origin
End use
(Linking weights)
Growth of Total GNP [a]
Growth of total GNP (established prices)
Growth of component
Growth of total GNP (factor cost)
Total GNP at factor cost, broken down by:
Sector of origin
End use
[a] Including subtotals.
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Base-year estimates are made for total GNP and its components by category of end use and by sector of origin. The end-use breakdown shows the distribution of output to final purchasers for uses such as consumption, investment, and government spending, including defense. In the breakdown of GNP by sector of origin, income resulting from the production of final output is allocated among sectors such as industry, agriculture, and services.[6] This income—or value added—consists of the earnings of labor and capital—the primary factors of production—including depreciation, but excluding intermediate purchases.

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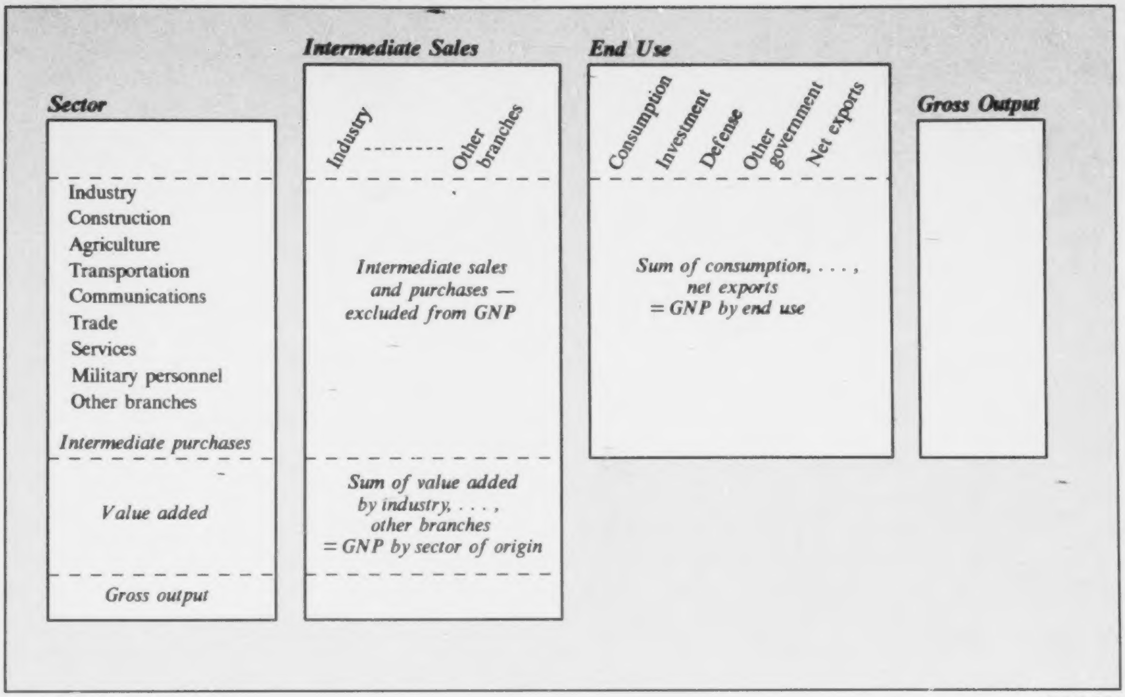
[6] Throughout this paper, the coverage of the industrial sector matches that used in Soviet official statistics. It comprises mining, manufacturing, and utilities as the scope of those activities is understood in the United States.

**Figure 3**
**Framework for Base-Year Estimates of Soviet GNP**


Sector
Industry
Construction
Agriculture
Transportation
Communications
Trade
Services
Military personnel
Other branches
Intermediate purchases
Value added
Gross output
Intermediate Sales
Industry
Other branches
Intermediate sales and purchases — excluded from GNP
Sum of value added by industry, . . . , other branches = GNP by sector of origin
End Use
Consumption
Investment
Defense
Other government
Net exports
Sum of consumption, . . . , net exports = GNP by end use
Gross Output

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Total value added by sector of origin is identical to total GNP by end use because (see figure 3):

- Standard accounting procedures make the sum of all gross output produced in the economy—including intermediate sales—equal to the sum of all income generated in production—including intermediate purchases.

- The sum of intermediate sales excluded from GNP by end use reflects the same transactions as the sum of intermediate purchases excluded from GNP by sector of origin.

So the difference between total gross output and total intermediate output—or total end use—matches the difference between total gross income and total intermediate input—or total value added.

Base-year estimates of GNP are valued initially in Soviet established prices, which are the actual prices paid by final purchasers. These prices, however, have several shortcomings that prevent them from reflecting the allocation of economic resources accurately:

- Substantial turnover and other indirect taxes—including import duties—are levied on selected products, mainly consumer goods such as automobiles, clothing, and alcohol.

- Subsidies keep prices artificially low for basic consumer needs like bread, meat and dairy products, and housing.

- Reported profits are an unreliable indicator of the contribution of capital to production because they reflect arbitrary margins set by officials in charge of central price formation, rather than competitive market conditions.

Therefore, in an attempt to approximate better the value of resources used in production and allocated to end uses, we adjust our estimates of Soviet GNP from established prices to factor cost. The goal of this adjustment is to make value added in each major sector of origin reflect as closely as possible that sector's use of labor and capital resources. Wages in established prices are accepted without adjustment because they are believed to reflect labor productivity differences reasonably well (as explained below). Official data on enterprise depreciation payments also are accepted, largely because little alternative information is available to measure wear and tear on the stock of plant and equipment. But the rest of value added in established prices—indirect taxes, subsidies (a negative entry), and profits—is not a good measure of returns on capital. These elements are subtracted from base-year estimates of value added in established prices (or added in the case of subsidies), and returns on fixed and working capital are added back. The rate of return is assumed to be uniform in all sectors at 12 percent, intended to reflect capital productivity (as explained below). Finally, the effects of the factor cost adjustment on GNP estimates by sector of origin are traced through the production process to the end-use side of GNP.[7]

***GNP Growth.*** Base-year estimates of Soviet GNP at factor cost are used as weights for estimates of GNP growth.[8] First, indexes of growth are estimated for the major components of GNP. In principle, the growth of total GNP then can be calculated as a weighted average of growth of the components either by sector of origin or by end use. In practice, total GNP growth is determined by the sector-of-origin estimates (see figure 4).[9] We believe this approach produces the more reliable results because GNP by end use includes some components—notably changes in inventories and strategic reserves—for which growth is particularly difficult to estimate.[10] With total GNP growth determined on the sector-of-origin side, the growth of the residual category of end use (outlays not elsewhere classified) includes any changes in the statistical discrepancy between sector-of-origin and end-use estimates.

In estimating growth by sector of origin, we seek to capture trends in real value added. If the necessary data are available, real value added should be calculated as a residual—that is, by subtracting intermediate inputs in constant prices from gross output in constant prices. Because information on the growth of intermediate inputs is limited, however, such a calculation of the growth of value added is feasible only for agriculture. Growth estimates for the other sectors of origin are based on proxies for value added:

- Gross output for industry, transportation, and trade.
- Labor inputs for many services—including education, health, and all government services.
- Intermediate inputs for construction.

### Base-Year GNP in Established Prices

The first step in the derivation of base-year (1982) estimates of Soviet GNP in established prices is the construction of a set of four basic accounts showing the incomes and outlays resulting from the economy's current production of goods and services.[11] Following

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[7] Estimates of GNP by end use are adjusted to factor cost with the aid of an input-output table, which shows linkages similar to those illustrated in figure 3. These linkages make it possible to determine not only the direct effects of changes in estimates of value added in, say, metallurgy, but also the indirect effects of such changes on output of machinery and other sectors using metals as inputs.

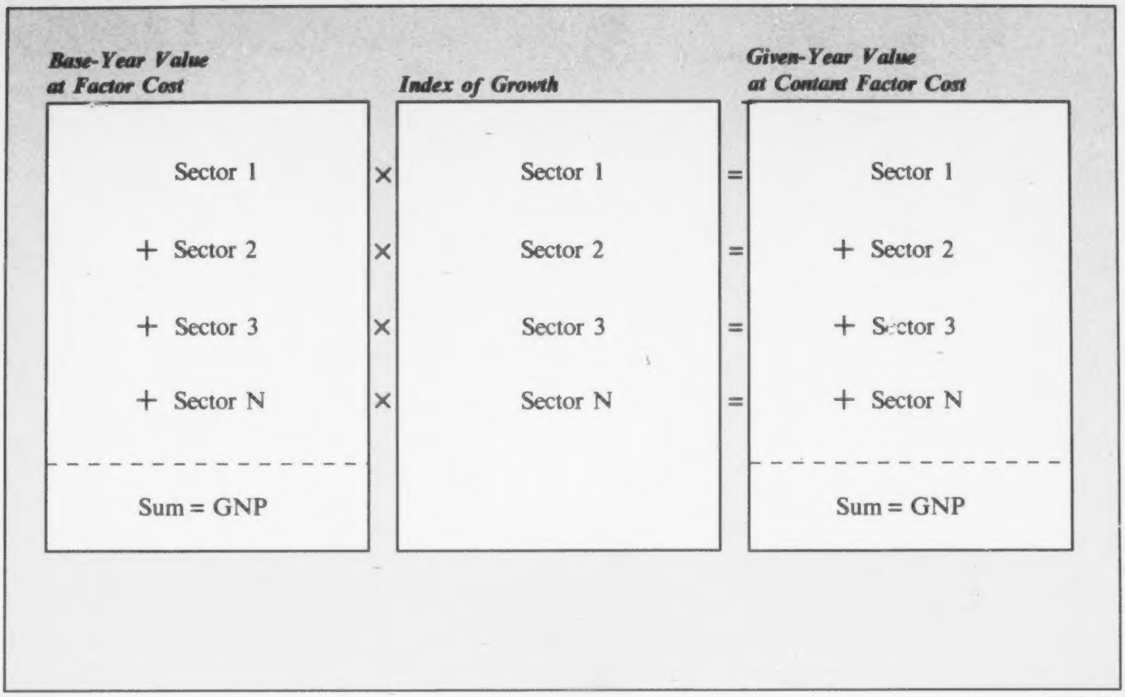
[8] Factor cost weights are preferred for most analytical purposes, but estimates in established prices also are used as weights for some calculations of growth. Consumption trends should be analyzed in established prices, for example, to reflect choices among goods and services available to consumers and to compare purchases with consumers' incomes.

[9] In this paper, the term "growth" can refer to estimates in the form either of index numbers (set equal to 100 in the base year) or of annual rates of increase or decrease (in percent). In our calculations of total GNP growth, for example, indexes for each sector of origin are multiplied by sectoral value added in the base year, and the resulting values in constant prices are summed. Indexes and annual rates of change of GNP are then calculated from these values.

[10] Inventory change is included in the investment category of base-year GNP. Because we do not have enough data to estimate inventory change every year, however, this item is part of the residual category of end use in our estimates of GNP growth.

[11] See appendix B for tables of the basic accounts for 1982, including their derivation.

**Figure 4**
**Basis for Calculating Soviet GNP Growth**



Base-Year Value at Factor Cost
Index of Growth
Given-Year Value at Contant Factor Cost
Sector 1
+ Sector 2
+ Sector 3
+ Sector N
Sum = GNP
×
Sector 1
Sector 2
Sector 3
Sector N
=
Sector 1
+ Sector 2
+ Sector 3
+ Sector N
Sum = GNP

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a scheme initially developed by Abram Bergson, incomes and outlays are estimated separately for households and the public sector.[12] In the USSR, the public sector performs many functions that would be carried out privately in market economies. It includes state enterprises, collective farms, and other producer and consumer cooperatives, as well as government and other institutions funded by the state budget.

State enterprises, collective farms, and other producer cooperatives perform functions similar to those of the business sector in the United States. They operate as *khozraschet* (economically accountable) units, producing goods and services. Usually, they are expected to earn enough income from selling their output to cover current operating costs and a portion of investment costs. Institutions funded by the state budget perform functions similar to those of the US government. In contrast to *khozraschet* units, they receive all of their income as grants and provide services at no charge, or at nominal prices.

***Basic Income and Outlay Accounts.*** To estimate the breakdown of GNP by sector of origin, each type of income must be distributed among the sectors in which it is earned (see figure 5). Incomes of households consist mainly of wages and salaries, net income from agriculture, and earnings from privately provided services. Public-sector incomes include social insurance charges, profits, turnover and other indirect taxes, subsidies, and depreciation.

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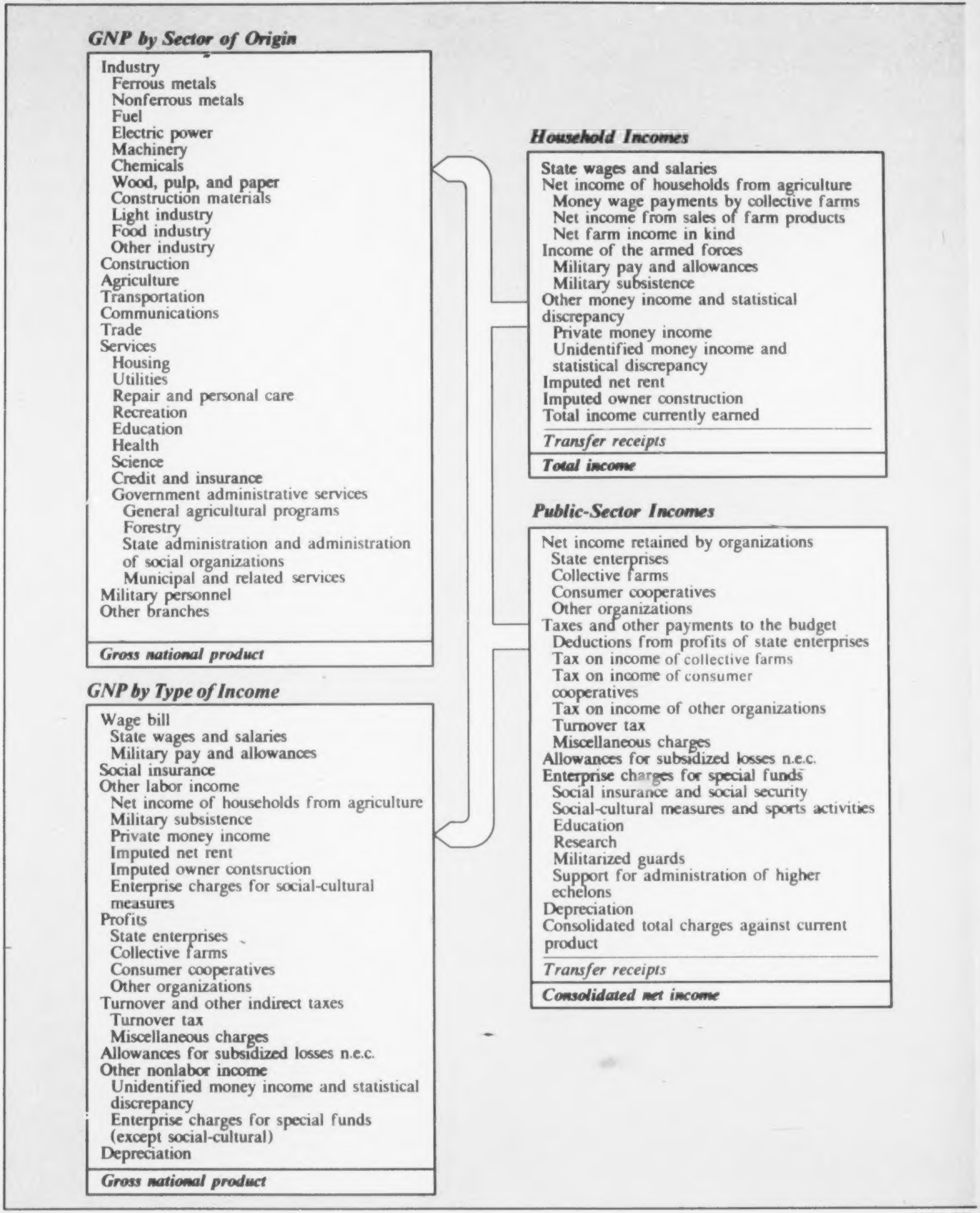
[12] See his *Soviet National Income and Product in 1937* (New York: Columbia University Press, 1953), chapter 2; and, with Hans Heymann, Jr., *Soviet National Income and Product, 1940-48* (New York: Columbia University Press, 1954), chapter 2.

**Figure 5**
**Components of Base-Year Soviet GNP in Established Prices**



***GNP by Sector of Origin***

- Industry
  - Ferrous metals
  - Nonferrous metals
  - Fuel
  - Electric power
  - Machinery
  - Chemicals
  - Wood, pulp, and paper
  - Construction materials
  - Light industry
  - Food industry
  - Other industry
- Construction
- Agriculture
- Transportation
- Communications
- Trade
- Services
  - Housing
  - Utilities
  - Repair and personal care
  - Recreation
  - Education
  - Health
  - Science
  - Credit and insurance
  - Government administrative services
    - General agricultural programs
    - Forestry
    - State administration and administration of social organizations
    - Municipal and related services
- Military personnel
- Other branches

***Gross national product***

***GNP by Type of Income***

- Wage bill
  - State wages and salaries
  - Military pay and allowances
- Social insurance
- Other labor income
  - Net income of households from agriculture
  - Military subsistence
  - Private money income
  - Imputed net rent
  - Imputed owner contsruction
  - Enterprise charges for social-cultural measures
- Profits
  - State enterprises
  - Collective farms
  - Consumer cooperatives
  - Other organizations
- Turnover and other indirect taxes
  - Turnover tax
  - Miscellaneous charges
- Allowances for subsidized losses n.e.c.
- Other nonlabor income
  - Unidentified money income and statistical discrepancy
  - Enterprise charges for special funds (except social-cultural)
- Depreciation

***Gross national product***

***Household Incomes***

- State wages and salaries
- Net income of households from agriculture
  - Money wage payments by collective farms
  - Net income from sales of farm products
  - Net farm income in kind
- Income of the armed forces
  - Military pay and allowances
  - Military subsistence
- Other money income and statistical discrepancy
  - Private money income
  - Unidentified money income and statistical discrepancy
- Imputed net rent
- Imputed owner construction
- Total income currently earned

*Transfer receipts*

***Total income***

***Public-Sector Incomes***

- Net income retained by organizations
  - State enterprises
  - Collective farms
  - Consumer cooperatives
  - Other organizations
- Taxes and other payments to the budget
  - Deductions from profits of state enterprises
  - Tax on income of collective farms
  - Tax on income of consumer cooperatives
  - Tax on income of other organizations
  - Turnover tax
  - Miscellaneous charges
- Allowances for subsidized losses n.e.c.
- Enterprise charges for special funds
  - Social insurance and social security
  - Social-cultural measures and sports activities
  - Education
  - Research
  - Militarized guards
  - Support for administration of higher echelons
- Depreciation
- Consolidated total charges against current product

*Transfer receipts*

***Consolidated net income***

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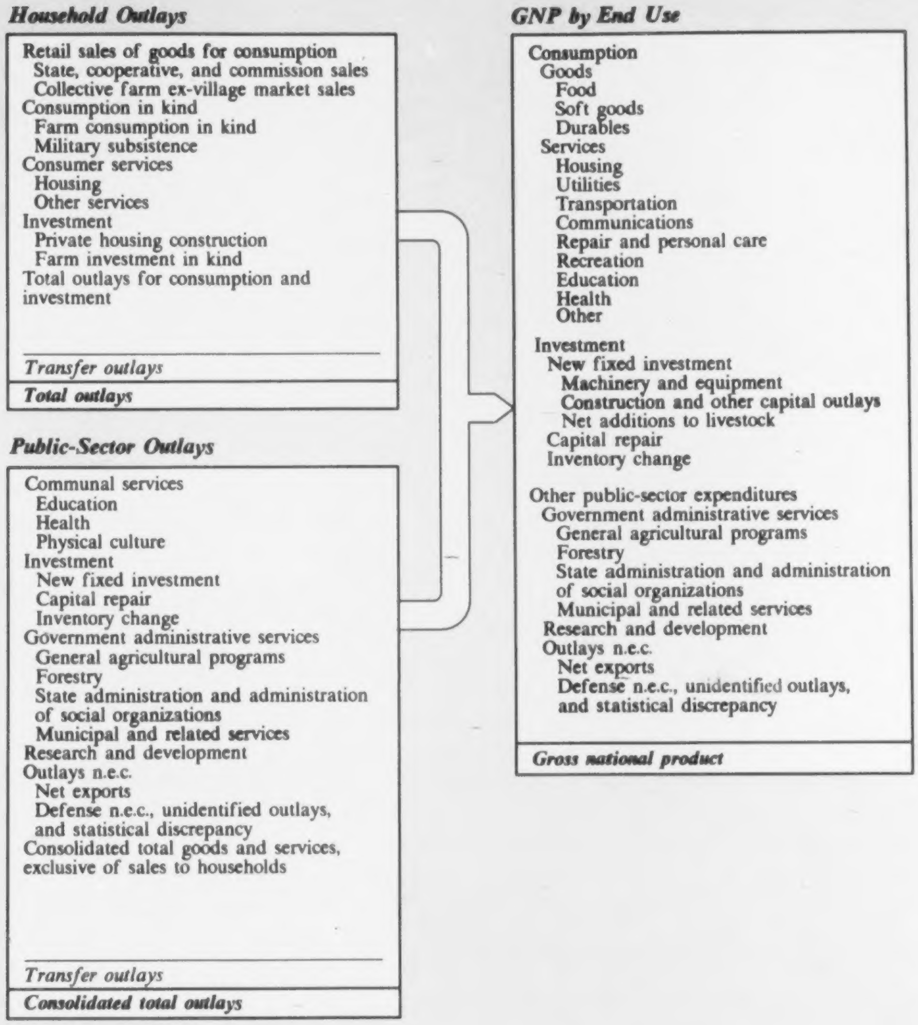
**Figure 5 (continued)**



***Household Outlays***

- Retail sales of goods for consumption
  - State, cooperative, and commission sales
  - Collective farm ex-village market sales
- Consumption in kind
  - Farm consumption in kind
  - Military subsistence
- Consumer services
  - Housing
  - Other services
- Investment
  - Private housing construction
  - Farm investment in kind
- Total outlays for consumption and investment

*Transfer outlays*

***Total outlays***

***Public-Sector Outlays***

- Communal services
  - Education
  - Health
  - Physical culture
- Investment
  - New fixed investment
  - Capital repair
  - Inventory change
- Government administrative services
  - General agricultural programs
  - Forestry
  - State administration and administration of social organizations
  - Municipal and related services
- Research and development
- Outlays n.e.c.
  - Net exports
  - Defense n.e.c., unidentified outlays, and statistical discrepancy
- Consolidated total goods and services, exclusive of sales to households

*Transfer outlays*

***Consolidated total outlays***

***GNP by End Use***

- Consumption
  - Goods
    - Food
    - Soft goods
    - Durables
  - Services
    - Housing
    - Utilities
    - Transportation
    - Communications
    - Repair and personal care
    - Recreation
    - Education
    - Health
    - Other
- Investment
  - New fixed investment
    - Machinery and equipment
    - Construction and other capital outlays
    - Net additions to livestock
  - Capital repair
  - Inventory change
- Other public-sector expenditures
  - Government administrative services
    - General agricultural programs
    - Forestry
    - State administration and administration of social organizations
    - Municipal and related services
  - Research and development
  - Outlays n.e.c.
    - Net exports
    - Defense n.e.c., unidentified outlays, and statistical discrepancy

***Gross national product***

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Household and public-sector outlays—on consumer goods and services, investment, and government services—form the basis for the breakdown of GNP by end use. The difference between total GNP and the identified items in these categories constitutes the residual category of end use—outlays not elsewhere classified (n.e.c.). These outlays include a portion of defense spending, exports net of imports, unidentified outlays, and a statistical discrepancy.

*End-Use Residual.* The CIA's estimates of total expenditures on defense are independent of the GNP accounts; the sources of data used in estimating GNP contain almost no information about defense. The value of outlays n.e.c. in the end-use residual includes part of defense spending but is too small to cover all of it. We consider it likely that several other categories of GNP by end use include military as well as civilian outlays on goods and services. These categories are investment—including new construction, new machinery, and capital repair—research and development, and miscellaneous consumer and government services.[13]

Also in the end-use residual, exports and imports are valued at what the Soviets call foreign trade prices—prices prevailing on world markets, converted to rubles at official exchange rates. Except for the arbitrary nature of Soviet exchange rates, this valuation of trade matches that recommended by the United Nations for its System of National Accounts. Strictly speaking, our estimates of "GNP" actually reflect gross domestic product (GDP) because payments for labor and capital services exchanged with other countries are not included in exports and imports. Payments of this kind are thus far of little consequence, however, so differences between GNP and GDP are probably small.[14]

*Determination of Total GNP.* The total value of GNP in the base year is derived by consolidating the four basic income and outlay accounts. In principle, because total incomes must equal total outlays by definition, this consolidation could be done by adding either incomes or outlays of households and the public sector, except for transfers.[15]

In practice, our estimates of household outlays and public-sector incomes—which are judged more reliable than estimates of household incomes and public-sector outlays—provide the control total for GNP overall. The coverage of household outlays appears reasonably complete, while the coverage of household incomes is known to be incomplete. Estimates of public-sector incomes are subject to some uncertainty, especially in the case of miscellaneous budget revenues. But the difficulties of estimating public-sector outlays—without knowing how much of total defense spending (estimated independently of GNP) is concealed in investment and other civilian categories and how much is included in outlays n.e.c.—are even greater.

*Imputations.* Like GNP accounts for the United States, our estimates of Soviet GNP include imputed values for several kinds of output that are not exchanged through the usual buyer-seller channels and would not otherwise be assigned monetary values. The principal imputations cover:

- Agricultural production consumed and invested in kind—farm consumption of home-produced food and changes in private livestock inventories—valued at average selling prices.
- Subsistence rations of food and clothing given to members of the armed forces and valued at state retail prices.
- The rental value of owner-occupied housing, with the average rent on state housing applied to private housing.

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[13] For further discussion of the relationship between the CIA's estimates of defense spending and GNP, see CIA Research Paper, *Soviet Gross National Product in Current Prices, 1960-80* (SOV 83-10037, March 1983), pp. 3, 13, 24.

[14] We are studying the feasibility of developing estimates of GNP proper. To estimate GNP, payments to Soviet nationals (and the government) of wages and salaries earned abroad and returns on capital invested abroad would have to be added to GDP. Similarly, payments to foreign nationals of wages, salaries, and returns on capital earned inside the USSR's borders would have to be subtracted.

[15] Transfers, such as pensions, are reallocations of income between households and the public sector. They are excluded from GNP because they do not reflect current production of final goods and services. (Current provision for future pensions is included in GNP, however, in the form of social insurance payments by employers.)

- Construction of private housing by owners, with owners' labor implicitly valued at the same wage rate as labor hired for such construction.

***Sources of Data.*** In general, our methods of estimating 1982 GNP in established prices are the same as those used for 1970 GNP in established prices.[16] The availability and quality of the evidence for the 1982 estimates are fairly good, in our view, but somewhat short of the 1970 standard. Data on many GNP components are obtained directly from official Soviet statistical publications, and estimates based on these data continue to be reliable. For other components, however—especially budgetary incomes and outlays on privately provided services—estimates must be pieced together from Soviet monographs and journal articles, which do not always give information for the desired year and definition and often are inconsistent.

***Contribution of Second Economy.*** The "second economy" in the USSR includes a variety of private and illegal or questionably legal activities, some of which contribute to GNP while others do not. The full scope of the USSR's second economy, according to Gregory Grossman's definition, is broad:

> As some scholars define it, the second economy comprises all production and exchange activity that fulfills at least *one* of the two following tests: (a) being directly for private gain; (b) being in some significant respect in knowing contravention of existing law.[17]

To facilitate international comparisons, Soviet GNP should include the full range of economic activities measured in GNP statistics for Western countries. This standard calls for the inclusion of all legal private production and also of activities that are illegal or tightly restricted in the USSR but not in the West. Activities that would be considered crimes in any country should be excluded, following Western practice. It is often difficult, however, to draw the line between activities that are illegal because of the USSR's political and economic system and activities that would be illegal in the West, where laws differ among countries.[18]

Our base-year estimates of Soviet GNP in 1982 cover most of the second economy's activities that, as best we can determine, should be included, but problems of acquiring the necessary data prevent full coverage.[19] These estimates include all of the legal private production we can identify in agriculture and housing. Some undercounting of this production is possible, however, if there are gaps in the official Soviet data on which the estimates are based. In addition, GNP includes a wide variety of privately provided services that are legal in the West, without distinction as to which are classified as legal or illegal by the Soviet authorities. The coverage of repair and personal care services—estimated from information in Soviet monographs and press and journal articles—is uncertain but probably somewhat low. Estimates of privately provided health and education services are based on sparse information and may be understated.

In our judgment, GNP should include any increases in output available to final purchasers as a result of the diversion of state resources—such as the construction of private housing using materials stolen from state enterprises.[20] Some private activities involving such diversion are reflected in our estimates of GNP, but others are not. Private housing built with stolen materials is included to whatever (unknown) extent it is captured in official Soviet investment statistics. On the other hand, most illegal production of consumer goods probably is missed in our estimates. Such production is counted if it is sold through state retail outlets, but most of it probably is sold privately.

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[16] For details of the estimation of 1970 GNP in established prices, see *USSR: Measures*, pp. 125-161; and CIA Research Aid, *USSR: Gross National Product Accounts, 1970* (A(ER) 75-76, November 1975).

[17] "The 'Second Economy' in the USSR," *Problems of Communism* (September-October 1977): p. 25.

[18] For discussions of the treatment of illegal activities in US GNP, see Carol S. Carson, "The Underground Economy: An Introduction," *Survey of Current Business* (May 1984): pp. 22-24, continued in *Survey of Current Business* (July 1984): pp. 106-109; Edward F. Denison, "Is U.S. Growth Understated Because of the Underground Economy? Employment Ratios Suggest Not," *Review of Income and Wealth* (March 1982): pp. 2-4; and George Jaszi, "The Conceptual Basis of the Accounts: A Reexamination," in Conference on Research in Income and Wealth, *A Critique of the United States Income and Product Accounts*, Studies in Income and Wealth, Vol. 22 (Princeton: Princeton University Press, 1958), p. 143.

[19] For a detailed discussion of the extent to which the second economy is covered in earlier CIA estimates of Soviet GNP, see Gertrude E. Schroeder and Rush V. Greenslade, "On the Measurement of the Second Economy in the USSR," *ACES Bulletin* (Spring 1979): pp. 3-21.

[20] Activities that do not add to legal production of goods and services for final use should be excluded, however. For example, theft of goods from state retail inventories for consumption by the thief represents a transfer rather than an addition to GNP. (If inventories are measured after such theft has occurred, however, both inventories and GNP will be understated unless the value of the theft is estimated and added back.)

***Comparison With US Methods.*** Although we strive to match US practice as closely as possible in constructing base-year estimates of Soviet GNP, some differences cannot be avoided. The basic framework of our breakdowns by type of income and by end use is similar to that used in the US national income and product accounts (see figure 6).[21] Definitions of many individual components differ, however, largely because of the major differences between economic systems and institutions in the two countries.[22]

Most of the components of Soviet GNP by type of income reflect institutional arrangements that differ considerably from those in the United States. Wages and social insurance, which are essentially similar in both countries, are the exception. Several other components of Soviet GNP by type of income—profits, indirect taxes, subsidies, and depreciation—are roughly similar in concept to the corresponding US categories. The fiscal and financial systems on which the relative sizes of these components depend, however, are very different in the two countries.

For still other types of income, institutional differences have even greater effects. Because of restrictions on private ownership in the USSR, Soviet GNP includes only a fraction of the earnings in the US categories for proprietors' income and rental income of persons. Moreover, interest is not included in Soviet GNP in established prices, except to the extent that payments into the state budget for the use of capital are reflected in budgetary income.

Several components of Soviet GNP by end use also differ in coverage from the corresponding categories of US GNP. Because nearly all health and education are provided by the government in the USSR, we group these services with consumption in Soviet GNP. The publicly provided portion of these services would be counted as government spending in the United States.[23] The government also administers a large share of investment in the USSR, and the investment category of Soviet GNP includes government expenditures on social infrastructure such as housing, utilities, highways, airports, schools, and health facilities. In US GNP, the investment category includes only private spending; government purchases of capital goods as well as less durable items are considered part of government spending.

Our estimates of the capital repair component of Soviet GNP include some expenditures that would be considered intermediate rather than final uses of output—and therefore would be excluded from GNP—in the United States. From Soviet data on capital repair, it is nearly impossible to establish a boundary between routine maintenance of the capital stock, which should be counted as a cost of current operations, and major repairs, which are included correctly in investment used to replace aging plant and equipment. Similarly, Soviet outlays on research and development include some activities that would be charged to current operating expenses in the United States. Government-funded research and development is considered final output in both countries, but privately financed activities, like other business expenses, are excluded from US GNP.

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[21] Estimates of GNP by sector of origin are also available for the United States, and in much greater detail than for the USSR. These estimates, however, do not play a key role in determining the real growth of total US GNP, which reflects a weighted average of the growth of components by end use, rather than by sector of origin.

[22] For more information on how the major categories of US and Soviet GNP compare, see CIA Research Paper, *USSR: Toward a Reconciliation of Marxist and Western Measures of National Income* (ER 78-10505, October 1978). Comparisons of these categories are also discussed in *USSR: Measures*, pp. 30-32; and in CIA, *USSR: Gross National Product Accounts*, 1970, pp. 13-14.

[23] In GNP accounts for both the USSR and the United States, government services are valued at the cost of the labor and materials used to provide them. Private consumer services are more widely available in the United States, however, at prices that include profits as well as costs. The share of state-provided consumer services in Soviet GNP would rise if some of these services were valued at prices higher than costs.

**Figure 6**
**Major Components of US and Soviet GNP**

*GNP by Type of Income*

| US | Soviet |
|---|---|
| Compensation of employees | Wage bill<br>Social insurance |
| Proprietors' income | Other labor income |
| Rental income of persons | |
| Corporate profits | Profits |
| Net interest | Other nonlabor income |
| Indirect business taxes | Indirect taxes |
| Subsidies | Subsidies |
| Capital consumption allowances (depreciation) | Depreciation |

*GNP by End Use*

| US | Soviet |
|---|---|
| Personal consumption expenditures<br>Durable goods<br>Nondurable goods<br>Services | Consumption<br>Food<br>Soft goods<br>Durables<br>Services<br>Household<br>Communal |
| Gross private domestic investment<br>Fixed investment<br>Nonresidential<br>Structures<br>Producers' durable equipment<br>Residential<br>Change in business inventories | Investment<br>New fixed investment<br>Machinery and equipment<br>Construction and other<br>Net additions to livestock<br>Capital repair |
| Government purchases<br>Federal<br>National defense<br>Nondefense<br>State and local | Other public-sector expenditures<br>Government administrative services<br>Research and development |
| Net exports<br>Exports<br>Imports | Outlays n.e.c.<br>Net exports<br>Defense n.e.c. |

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## Factor Cost Adjustment of Base-Year GNP

Prices are set administratively in the USSR and often are used more to further various government policies—sometimes with conflicting objectives—than to promote efficiency in production and exchange. Retail prices of consumer "luxuries" like alcohol and automobiles, for example, include large turnover taxes that are a major source of revenue for the state. On the other hand, retail prices of "necessary" consumer goods and services, such as staple foods and housing, have not been raised officially for decades. Because production costs have risen, large subsidies—about 20 percent of the state budget—are now required to maintain such low prices. Wholesale prices of energy and many basic industrial materials, moreover, have been kept low by restricting profit margins, in order to hold down costs for sectors using these products as inputs.

***Valuation of GNP.*** Ideally, GNP should be valued in prices that reflect the preferences of final consumers—or perhaps of central planners in the USSR—and that encourage the efficient use of inputs in production.[24] Actual prices in all countries fall short of these theoretical standards for measuring resource allocation and economic growth. In the West, the usual convention is to accept market prices as close enough to the standards for purposes of estimating GNP. Sometimes GNP is also valued at factor cost—that is, at market prices excluding indirect taxes and subsidies.

In examining Soviet pricing practices, Abram Bergson considered these exclusions insufficient, by themselves, because established prices did not adequately reflect the cost of capital. He therefore devised the adjusted factor cost standard to provide an improved basis for measuring the Soviet economy's potential to produce goods and services.[25] The basic premise of his approach is that output prices reflecting the costs of economic resources can be calculated if inputs of the primary factors of production—labor, capital, and land—are valued in proportion to their average productivities. Bergson has demonstrated that these adjusted factor costs (hereafter, simply factor costs) provide appropriate weights for estimating changes in production potential despite inefficiencies that keep output from reaching its maximum level. Strictly speaking, however, the preferences of final users are not reflected in factor cost values.[26]

Still, there are problems with the Soviet price system—especially its rules for pricing new products—that the factor cost adjustment does not address. Wholesale prices of machinery and other goods with frequently changing specifications often include exaggerated price increments for minor improvements in quality. This may well contribute to an overstatement of the prices of machinery relative to those of other products.[27] In the words of a prominent Soviet advocate of economic reform, "Prices for machines, industrial equipment, and the entire range of manufactured consumer goods are too high." [28]

In addition, the factor cost adjustment does not necessarily result in market-clearing prices. Neither does it indicate appropriate valuations for the activities of the second economy that are encouraged by chronic imbalances between supply and demand.[29] For example, the artificially low prices of many consumer goods in state retail stores often lead to the resale of such goods on black markets at sharply higher prices.

***Adjustment of GNP by Sector of Origin.*** Our current procedures for adjusting 1982 Soviet GNP to factor cost differ in some of the specifics from those used previously to adjust 1970 GNP, but the basic approach has not changed.[30] As before, the adjustment begins with an evaluation of how well the elements of value added in established prices reflect the contributions of the primary factors of production to GNP by sector of origin.

According to Bergson's adjusted factor cost standard, wage differences among sectors should reflect occupational differences in labor productivity and the job

[24] For a list of Western articles on the theory of valuing national income, see *USSR: Measures*, p. 34.

[25] See his *Soviet National Income and Product in 1937*, chapters 3 and 4; *The Real National Income of Soviet Russia Since 1928* (Cambridge, Mass.: Harvard University Press, 1961), chapters 3, 8, and 9; and, with Hans Heymann, Jr., *Soviet National Income and Product, 1940-48*, chapter 3.

[26] The typical interpretation of Western measures of economic growth—weighted by market prices—is that they reflect changes in consumer welfare. This interpretation cannot be applied to estimates of Soviet GNP at factor cost because the adjustment procedure does not attempt to take consumers' or planners' preferences into account. (See Bergson, *The Real National Income of Soviet Russia*, pp. 36-39, 115-117.) Bergson has examined trends in welfare by estimating consumption in what he calls adjusted market prices, but he has not extended those calculations to other end uses of GNP. (See *The Real National Income of Soviet Russia*, chapter 10.)

[27] The pricing of new products also leads to disguised inflation in some of the official Soviet data used in our estimates of growth, particulary for machinery output (on the sector-of-origin side of GNP) and machinery investment (on the end-use side). This inflation is discussed below, in the section, "Reliability of Estimates of Growth."

[28] Interview with Nikolay Shmelev by Viktor Loshak, *Moscow News* (No. 50, 1988): p. 10.

[29] For a discussion of this point, see Vladimir G. Treml, "Notes on Estimation of Second Economy Activities and National Income Accounts" (manuscript, 1986), pp. 22-23.

[30] See appendix C for detailed tables of the results of the factor cost adjustment.

preferences of workers. The mobility ~~of labor~~ and the flexibility of wage rates in the USSR appear sufficient for wages in established prices to meet this requirement reasonably well, except in the case of military pay.[31]

Bergson has also recommended that charges for capital should consist of an allowance for depreciation, plus interest calculated at a rate representing the average productivity of capital in the economy. Depreciation payments in established prices are accepted without adjustment for our GNP estimates at factor cost, largely because, as noted earlier, so little information about wear and tear on capital is available.[32]

As also mentioned above, however, reported profits and the rest of value added in established prices do not provide a good measure of returns on capital. When prices are planned, profit rates are set arbitrarily for enterprises operating on a profit-or-loss basis. For institutions financed by the state budget, which are common in the service sectors, there is no provision at all for profits. These pricing policies contribute to wide variations among sectors in the relationship of reported profits to stocks of capital. Turnover and other indirect taxes and subsidies further widen the gap between established prices and resource costs. Moreover, the differentiated rates of many such taxes and subsidies are a major source of divergence from another requirement of the adjusted factor cost standard—that the price of a product should be the same for all purchasers.

Our factor cost adjustment subtracts reported profits, indirect taxes, and subsidies (initially entered with a minus sign, so added as a result of the adjustment) from the value added of each sector of origin in established prices. Returns on capital—calculated at a uniform rate on each sector's capital stock—are added back.[33] In these calculations:

- The rate of return is assumed to be 12 percent of fixed and working capital—including unfinished construction—the minimum rate set by Soviet planners for deciding that an investment project should be funded.[34]

- Stocks of fixed capital are valued net of depreciation because some sectors have older stocks than other sectors. The assumption of a uniform rate of return would not be strictly valid if age-related differences in wear and tear were not taken into account.[35]

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[31] We adjust military pay to factor cost by revaluing conscripts' incomes to reflect wages paid to civilian workers with roughly similar skills. That is, we replace the monetary pay and subsistence allowances of food and clothing actually received by conscripts with wages at an assumed rate slightly higher than the minimum wage for industrial workers. Incomes of military officers and other nonconscript personnel are not adjusted because their pay seems higher, if anything, than that of civilians for work of comparable responsibility and difficulty.

[32] The exception to this statement is that we impute depreciation on the stock of fixed capital in four service sectors: housing, education, health, and science. This imputation is made because many of these services are provided by institutions that are financed by the state budget and thus do not make depreciation payments.

[33] No returns are imputed on the capital stock of the government administrative service sectors (general agricultural programs, forestry, state administration and social organizations, culture, municipal services, and civilian police). This exclusion improves the comparability of our estimates with GNP statistics for Western countries, which do not allow for returns on capital owned by the government.

Furthermore, returns on capital are calculated at half of the usual rate for the housing, education, health, and science sectors. In the United States and other Western countries, returns on housing often are lower than returns on business capital, partly because of government policies encouraging individual ownership of homes. Also, many education, health, and science services are provided by the government, with no allowance for returns on government capital.

[34] An investment project that is approved for funding—for example, a new factory—must generate enough savings in future operating costs to pay back the outlays required to set it up. For most industries, the profits that eventually result from such cost savings are expected to cover state charges for the use of capital, interest on bank loans, maintenance of enterprise funds for small investments, and miscellaneous payments into the state budget. See Gosplan SSSR, *Metodicheskiye ukazaniya k razrabotke gosudarstvennykh planov ekonomicheskogo i sotsial'nogo razvitiya SSSR* (Methodological Instructions for Working Out State Plans for the Economic and Social Development of the USSR) (Moscow: Ekonomika, 1980), p. 441.

[35] In principle, capital stocks also should be revalued to reflect the effects of the factor cost adjustment on the prices of plant and equipment. We have not attempted such a revaluation because of a lack of information about the effects of price changes on capital stock values. A calculation of this kind was carried out, however, by Richard Moorsteen and Raymond P. Powell in *The Soviet Capital Stock, 1928-1962* (Homewood, Ill.: Richard D. Irwin, 1966), pp. 256-257.

These procedures for estimating returns on capital differ from those used in our factor cost adjustment of 1970 GNP.[36] There, the total value of returns on capital was assumed equal to the sum of the incomes removed from GNP in established prices. This assumption was dropped because it made the average rate of return in the economy depend on Soviet financial policies that are subject to change, such as decisions about the role of turnover taxes and subsidies in the state budget. Also, returns on capital in our previous estimates were distributed by sector of origin in proportion to gross sectoral capital stocks—before deduction of accumulated depreciation—thus ignoring the effects on returns of the proportion of service life exhausted. The assumed value of the gross return on capital in 1970 was equal to 18 percent of the gross stock, or 24 percent of the stock net of depreciation.

According to Bergson, returns on superior land and other natural resources also should be included in GNP at factor cost. Although we have not yet developed such estimates, we are examining possible methods of doing so. Meanwhile, the omission of returns on land reduces the shares of the agricultural, housing, fuel, and metallurgical sectors in GNP.

***Adjustment of GNP by End Use.*** A two-step procedure is used to transfer the factor cost adjustment from the sector-of-origin side of GNP to the end-use side (see figure 7 on pages 24 and 25). First, some of the indirect taxes and subsidies removed from value added in established prices fall directly on specific end uses of the products in question. These taxes (or subsidies) are subtracted directly from (or added to) the affected end uses.

Second, the indirect effects of substituting factor costs for established prices in estimates of GNP by sector of origin are calculated. For each sector, the change in the resource cost of capital implies a change in the price of output—and, at the same time, the change in value added implies a change in the value of gross output. The implied change in price—or gross output—is calculated with the aid of an estimated 1982 input-output table, which shows sector-by-sector linkages from value added to gross output and then to end use. Then this price change—in the form of a ratio for the appropriate sector—is multiplied by estimates of the end uses of the sector's output. (The latter estimates, as already noted, are valued in established prices after adjustment for the direct effects of taxes and subsidies.)

***Sources of Data.*** The factor cost adjustment requires two basic kinds of estimates besides those made for GNP in established prices: capital stock classified by sector of origin and an input-output table. Estimates of capital stock are taken largely from official Soviet statistical yearbooks. Values of fixed capital including depreciation—in prices said to be constant at 1973 levels—can be derived readily for most sectors. Fixed capital net of depreciation is calculated from data on the share of wear and tear in the value of gross capital stock. Values of working capital and unfinished construction—in current prices—are also given in official yearbooks. This information is less detailed than data on fixed capital, however; as a result, assumptions have to be made about the distribution of these values by sector. Still, our estimates of 1982 capital stock by sector of origin are about as reliable as estimates for 1970.

The input-output table used in the factor cost adjustment of 1982 GNP by end use is considerably less detailed than the table used for 1970.[37] Both tables are based on estimates made by the Center for International Research of the US Bureau of the Census, but the Soviet sources from which the new table is derived give much less information than was available about its predecessor.[38]

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[36] See *USSR: Measures*, pp. 38-41, 163-168.

[37] For example, the input-output table used for the 1970 factor cost adjustment was extended from the basic 1972 table to include estimates of intermediate sales and purchases of services. Such estimates have not been made for 1982 because the necessary information is lacking. Our factor cost adjustment of end uses of services in 1982 GNP, therefore, is not based on the calculations of price changes described in the text above. Instead, the estimate of end use of each service in established prices is adjusted by simply adding or subtracting the ruble difference between value added at factor cost and value added in established prices for the same service as a sector of origin.

[38] The table used to estimate 1970 GNP at factor cost is derived as described in *USSR: Measures* (pp. 38-40, 163-168) from the 1972 table published in Dimitri M. Gallik, Barry L. Kostinsky, and Vladimir G. Treml, *Input-Output Structure of the Soviet Economy: 1972*, Foreign Economic Report No. 18 (US Department of Commerce, Bureau of the Census, April 1983). For the 1982 input-output table, see Jeanine Braithwaite, "The 1982 Seventeen Sector Input-Output Table for the Soviet Union" (Center for International Research, Soviet Branch Research Note, June 1987).

***Results of Adjustment.*** The factor cost adjustment leads to some marked changes in the structure of GNP by sector of origin and by end use. On the sector-of-origin side, industry's share of total GNP is much lower at factor cost than in established prices, largely because almost all of the indirect taxes removed by the adjustment apply to industrial products (see table 5). The share of services, in contrast, is considerably higher, primarily because many services are heavily subsidized. Agriculture also has a larger share of GNP at factor cost, reflecting its greater use of capital than accounted for by reported profits. In like manner, the cost of capital contributes to higher shares of construction, transportation, and trade in GNP at factor cost, although not as much higher as in agriculture. The increases in the shares of agriculture and construction suggest that the factor cost adjustment includes a correction for depressed profit levels prior to the revisions of established prices that occurred after 1982.

These changes in GNP by sector of origin carry over to the allocation of GNP by end use (see table 6). Total consumption takes a slightly higher share of GNP at factor cost than in established prices, while the shares of some of the components of consumption are quite different. The adjustment has little effect on the share of food consumption because the indirect taxes subtracted from consumption of alcoholic beverages and processed foods roughly balance the subsidies added to consumption of animal (meat and dairy) products and basic foods. Similarly, the indirect taxes subtracted from consumption of soft goods and durables nearly offset the subsidies added to consumption of housing and other services. The factor cost adjustment raises investment's share of GNP because it raises the prices of construction and machinery—the major components of investment—relative to prices of other output. The share of defense, too, is slightly higher at factor cost.

The factor cost adjustment also reduces the total value of base-year (1982) GNP by about 10 percent. On balance, the sum of the indirect taxes, subsidies, and profits removed from GNP in established prices exceeds the value of the returns on capital added back to GNP at factor cost. Almost all of the difference results from an implicit change to domestic prices in the valuation of foreign trade. As noted above, GNP in established prices includes exports and imports

**Table 5** *Percent shares*

**USSR: Distribution of GNP in 1982 by Sector of Origin in Established Prices and at Factor Cost**

| | Established Prices | Factor Cost |
|---|---|---|
| **Total GNP** | **100.0** | **100.0** |
| **Industry** | **50.6** | **32.4** |
| Ferrous metals | 1.9 | 1.9 |
| Nonferrous metals | 1.4 | 1.3 |
| Fuel | 9.9 | 3.1 |
| Electric power | 1.8 | 2.3 |
| Machinery | 11.5 | 11.4 |
| Chemicals | 2.2 | 2.4 |
| Wood, pulp, and paper | 2.2 | 1.9 |
| Construction materials | 1.9 | 1.9 |
| Light industry | 8.2 | 2.2 |
| Food industry | 7.7 | 2.6 |
| Other industry | 1.9 | 1.3 |
| **Construction** | **6.7** | **7.8** |
| **Agriculture** | **15.3** | **20.6** |
| **Transportation** | **8.4** | **9.5** |
| **Communications** | **0.8** | **0.9** |
| **Trade** | **4.6** | **6.5** |
| **Services** | **11.6** | **20.1** |
| Housing | 0.8 | 5.5 |
| Utilities | 0.6 | 1.3 |
| Repair and personal care | 1.6 | 1.6 |
| Recreation | 0.5 | 1.0 |
| Education | 2.6 | 3.9 |
| Health | 1.4 | 2.1 |
| Science | 1.8 | 2.2 |
| Credit and insurance | 0.4 | 0.3 |
| Government administration | 2.1 | 2.2 |
| General agricultural programs | 0.3 | 0.3 |
| Forestry | 0.1 | 0.1 |
| State administration | 0.8 | 0.8 |
| Culture | 0.3 | 0.3 |
| Municipal services | 0.2 | 0.2 |
| Civilian police | 0.4 | 0.5 |
| **Military personnel** | **1.4** | **1.9** |
| **Other branches** | **0.4** | **0.3** |

**Figure 7**
**Factor Adjustment of Base-Year Soviet GNP**

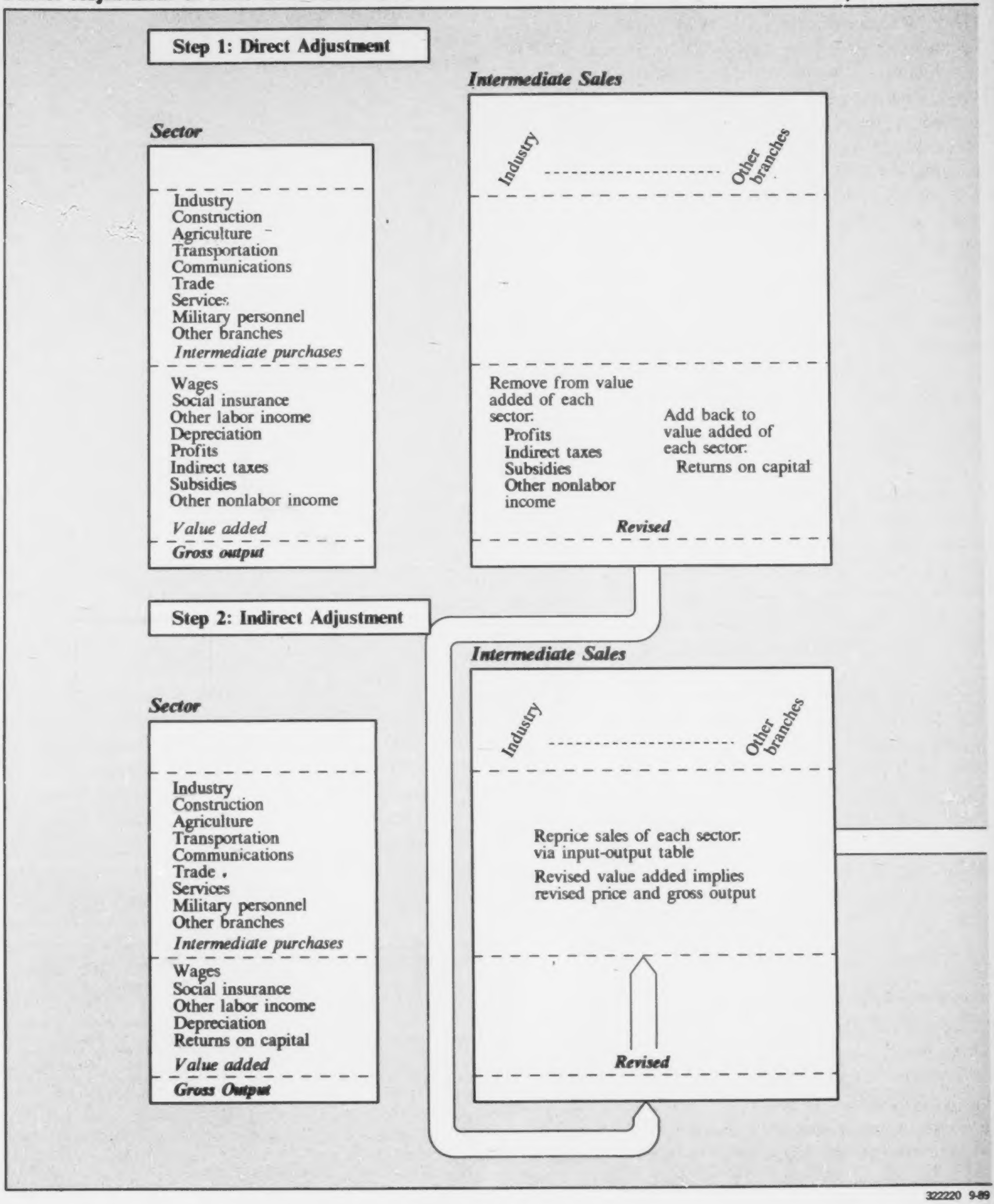
Step 1: Direct Adjustment
Sector
Industry
Construction
Agriculture
Transportation
Communications
Trade
Services
Military personnel
Other branches
Intermediate purchases
Wages
Social insurance
Other labor income
Depreciation
Profits
Indirect taxes
Subsidies
Other nonlabor income
Value added
Gross output
Intermediate Sales
Industry
Other branches
Remove from value added of each sector:
Profits
Indirect taxes
Subsidies
Other nonlabor income
Add back to value added of each sector:
Returns on capital
Revised
Step 2: Indirect Adjustment
Sector
Industry
Construction
Agriculture
Transportation
Communications
Trade
Services
Military personnel
Other branches
Intermediate purchases
Wages
Social insurance
Other labor income
Depreciation
Returns on capital
Value added
Gross Output
Intermediate Sales
Industry
Other branches
Reprice sales of each sector: via input-output table
Revised value added implies revised price and gross output
Revised

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**Figure 7 (continued)**

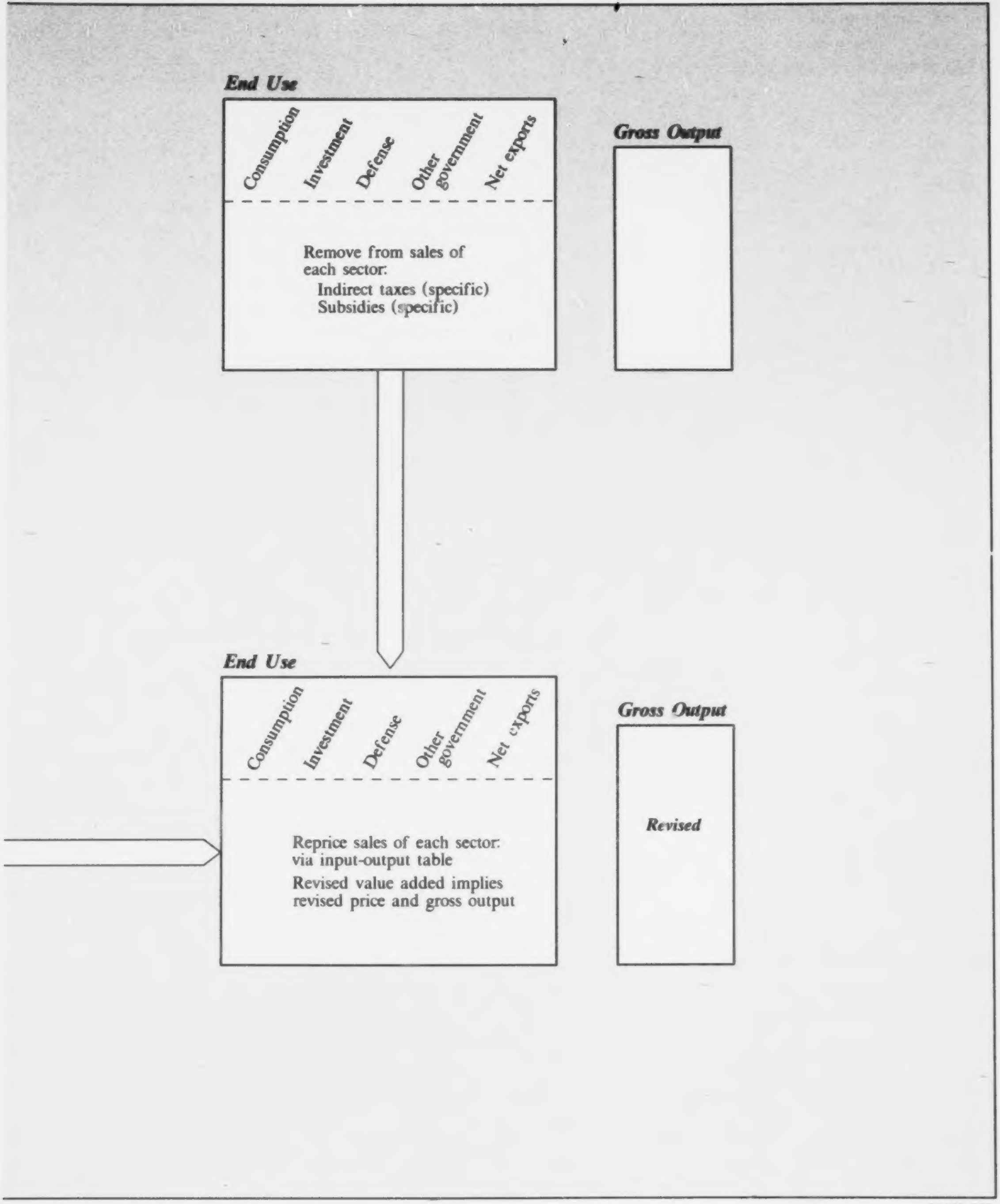
End Use
Consumption
Investment
Defense
Other government
Net exports
Remove from sales of each sector:
Indirect taxes (specific)
Subsidies (specific)
Gross Output
End Use
Consumption
Investment
Defense
Other government
Net exports
Reprice sales of each sector: via input-output table
Revised value added implies revised price and gross output
Gross Output
Revised

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**Table 6**
**USSR: Distribution of GNP in 1982 by End Use in Established Prices and at Factor Cost**

*Percent shares*

|  | Established Prices | Factor Cost |
|---|---|---|
| **Total GNP** | **100.0** | **100.0** |
| **Consumption** | **53.4** | **55.3** |
| Consumer goods | 41.8 | 35.2 |
| Food | 24.9 | 25.0 |
| Animal products | 9.1 | 13.6 |
| Processed foods | 2.8 | 2.1 |
| Basic foods | 4.7 | 5.8 |
| Beverages | 8.3 | 3.5 |
| Soft goods | 11.2 | 6.4 |
| Durables | 5.7 | 3.8 |
| Consumer services | 11.6 | 20.0 |
| Housing | 0.9 | 5.6 |
| Utilities | 0.9 | 1.7 |
| Transportation | 1.5 | 1.6 |
| Communications | 0.4 | 0.4 |
| Repair and personal care | 1.9 | 2.0 |
| Recreation | 0.6 | 1.1 |
| Education | 3.4 | 4.8 |
| Health | 2.0 | 2.8 |
| **Investment** | **28.1** | **30.4** |
| New fixed investment | 21.9 | 23.8 |
| Machinery and equipment | 8.6 | 9.1 |
| Construction and other | 13.1 | 14.4 |
| Net additions to livestock | 0.2 | 0.3 |
| Capital repair | 6.1 | 6.6 |
| **Other government outlays** | **18.6** | **14.3** |
| Government administration | 2.7 | 2.9 |
| Research, development, and outlays n.e.c. | 15.9 | 11.4 |

valued in foreign trade prices. Any differences between domestic and foreign trade prices are included in the indirect taxes—similar to turnover taxes on domestic output—removed by the factor cost adjustment:

- Some major exports—mostly of energy—are sold at foreign trade prices that are considerably higher than domestic costs plus profits. The surplus—which is collected by the state foreign trade authority and paid into the budget—is subtracted in the process of adjustment.
- Selected imports—primarily of soft goods and durables for consumption—are sold to domestic users at prices that include substantial duties. Our procedure for the factor cost adjustment subtracts import duties from consumption and from total GNP.

Finally, the factor cost adjustment affects our estimates of the growth of total GNP. For most of the period since 1950, rates of GNP growth at factor cost have been lower than rates in established prices (see table 7). The gap between these rates has narrowed gradually over time, however, and reversed direction in the 1980s. In large part, trends in this gap reflect differences in the contributions of industry and agriculture to overall growth. Industry, which has a smaller weight in GNP at factor cost than in established prices, traditionally has grown more rapidly than the rest of the economy, while agriculture, which has a larger weight, has grown more slowly. More recently, the growth of services, which have a larger weight at factor cost, has become faster than growth in industry and agriculture.

Besides total GNP growth, estimates of the growth of industry and services are affected by the factor cost adjustment because value-added weights are broken down by branch within these major sectors. (The growth of agriculture is not affected because only a single value-added weight is estimated for the sector.) For industry, growth at factor cost has exceeded growth in established prices. Part of the explanation is that the machinery branch, which has a greater weight at factor cost, grew faster than the rest of industry during the 1960s and 1970s. In the case of services, differences between growth rates at factor cost and in established prices have varied with differences between the growth of housing and growth in the rest of the sector.

## Growth of GNP

To estimate the growth of total GNP, as explained earlier, we need a base-year weight and an index of growth for each component. The indexes of component growth, in turn, are derived from additional, more detailed base-year weights and from data on

**Table 7**
**USSR: Effects of Factor Cost Adjustment on GNP Growth, 1951-87**

*Percent average annual rates*

| | GNP | | Industry | | Services | |
|---|---|---|---|---|---|---|
| | Established Prices | Factor Cost | Established Prices | Factor Cost | Established Prices | Factor Cost |
| 1951-55 | 6.0 | 4.9 | 9.8 | 9.7 | 1.9 | 2.6 |
| 1956-60 | 5.9 | 5.5 | 7.4 | 7.5 | 2.9 | 3.7 |
| 1961-65 | 5.0 | 4.8 | 6.0 | 6.5 | 4.7 | 4.6 |
| 1966-70 | 5.2 | 4.9 | 5.9 | 6.0 | 4.7 | 4.1 |
| 1971-75 | 3.4 | 3.0 | 5.0 | 5.6 | 3.7 | 3.3 |
| 1976-80 | 2.0 | 1.9 | 2.3 | 2.4 | 2.9 | 2.6 |
| 1981-85 | 1.7 | 1.8 | 1.8 | 2.0 | 2.1 | 2.2 |
| 1986-87 | 2.4 | 2.7 | 2.3 | 2.9 | 2.7 | 2.7 |

changes in the output of samples of products. These indexes are estimated for components of GNP both by sector of origin and by end use, but it is the sector-of-origin indexes that determine total GNP growth.

***Detailed Weights for Growth Estimates.*** The weights we use to calculate the growth of Soviet GNP are estimated at three levels of detail (see figure 8). At the first, most aggregated level, the weights come from our base-year estimates of the components of GNP by sector of origin and end use.[39] The most detailed, third-level weights are the prices of the individual products in the samples used to track growth of the components of GNP. Between these levels are intermediate weights, which link the growth of two major kinds of components of GNP with the growth of samples of individual products. These weights consist of estimates of:

- Value added by subbranch within the main branches of industry—for example, automobiles and precision instruments within the machinery branch—for GNP by sector of origin.
- Final expenditures by subcategory within consumption of food and soft goods—for example, clothing and shoes within soft goods consumption—for GNP by end use.

Our detailed weights for estimating the growth of GNP components are based on several kinds of sources, which vary in reliability. Information on the 1982 prices of individual products in our samples—the third-level weights—is adequate for the most part. It is sparse for chemicals and processed foods, however, and not as good generally as information on 1970 prices. The vast majority of 1982 prices are drawn from Soviet monographs and journal articles; official handbooks listing prices are not available.

For the second-level weights, estimates of 1982 value added by subbranch of industry are passable, but they are based on an input-output table considerably less detailed than its predecessor. On the other hand, 1982 expenditures by subcategory of consumption are estimated largely from data published in Soviet statistical yearbooks. We consider the quality of these estimates good—about on a par with that of the corresponding 1970 estimates.

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[39] Estimates valued at factor cost provide the aggregated weights preferred for most analytical purposes, but estimates based on established prices also are used as weights for some calculations of growth. Weights at the second and third levels are available only in established prices because it is not feasible to calculate the factor cost adjustment in the additional detail that would be required. For the industrial sector, however, these detailed weights exclude indirect taxes and subsidies.

**Figure 8**
**Levels of Weights for Estimates of GNP Growth**

***GNP accounts at factor cost and in established prices***

- ☐ Value added by sector of origin
- ☐ Final expenditure by category of end use

***Linking weights (for some major components of GNP)***

- ☐ Value added by subbranch of industry (based on input-output table in producers' prices)
- ☐ Final expenditure by subcategory of consumption (based on retail sales)

***Prices of products in samples (for components by sector of origin and by end use)***

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*Growth of GNP Components: Changes in Procedure.* For most components of Soviet GNP in 1982 prices, our methods of estimating growth are the same as those described in *USSR: Measures* for GNP in 1970 prices.[40] There have been modifications, however, in the estimation methods for industry, repair and personal care services, and recreation services.

*Industry.* The basic methods used to estimate industrial growth are the same as before, but the sample of products has changed:

- Products have been added to the samples for two branches—wood, pulp, and paper, and construction materials.
- Products for which detailed breakdowns are no longer available have been combined in the samples for each of four branches—ferrous metals; chemicals; wood, pulp, and paper; and construction materials.
- Data on coal and gas production have been adjusted for changes in energy content.

*Repair and Personal Care.* The repair and personal care sector includes both state-administered and privately provided services such as laundry, dry cleaning, barber and beauty shops, and repair of household appliances, automobiles, and housing. Very little information is available for the private component of the sector, and much of the information that is available is ambiguous in both coverage and valuation. Because of the lack of data, we assume that output of these private services has increased at a constant rate of 1 percent per year on a per capita basis. This assumption replaces a set of scattered—and probably inconsistent—observations for a few years, on which growth estimates in 1970 prices were based. The growth of state services in prices of both 1982 and 1970 is based on Soviet value data in prices officially described as "comparable."

*Recreation.* Estimates of the growth of recreation services are based on new information, including a revised sample of services provided by that sector. For the resorts and leisure component of recreation, estimates of growth now are combined, instead of being made separately, as was done for our estimates in 1970 prices. Moreover, the sample of services for this new, combined category adds data on the number of persons using rest bases and tourist hotels to earlier data on persons using sanatoriums, resorts, and rest homes. Data on hotel use (with employment in hotels serving as a proxy for the number of persons accommodated) have been dropped from the sample. The growth of the entertainment component of recreation is estimated, as before, from data on paid attendance at movies and theaters.

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[40] See especially pp. 83-123, 179-190, 219-229, 241-244, 253-259, 337-352.

## Reliability of Estimates of Growth

Measures of economic growth are subject to errors and uncertainties in any country—even one with a good, open statistical system—and the CIA's estimates of Soviet GNP growth are no exception.[41] Recently, for example, criticisms of official Soviet statistics have drawn renewed attention to sources of potential overstatement in some of the data we use to estimate GNP growth. Some of the other data used for our estimates, on the other hand, are widely believed by Western economists to understate growth.[42]

Estimates of the growth of total GNP are subject to uncertainty in (1) measuring the growth of the individual sectors of origin and (2) deriving the weights of these sectors in the base year. In addition, estimates of the growth of end uses are affected by inaccuracies, although these estimates are not used in determining total GNP growth. The potential for errors from each of these sources is reviewed below, and the likely impact on total GNP growth is assessed. In our judgment, this impact is generally not severe—although it cannot be dismissed—partly because errors in opposite directions offset each other to some extent. Finally, some avenues for future improvements in our GNP estimates are noted.

### Growth by Sector of Origin

There are several criteria for assessing the reliability of the estimate of growth for a particular sector of origin:

- How well the sample of the sector's products represents the full range of its output.
- How well the kinds of data available for these products reflect trends in the sector's real output, including changes in the mix and quality of products.
- How closely trends in value added are matched by trends in the proxy for it—such as gross output.

In the rest of this section, we discuss these criteria in turn and evaluate the extent to which our sector-of-origin estimates satisfy them.

***Adequacy of Samples.*** Because the availability of Soviet data on the production of individual products is limited, our samples are not selected randomly. Rather, we use as much regularly published data as possible, except that items already covered in larger product categories are excluded.[43] In addition, we estimate production of goods about which the Soviets release little or no information—notably military machinery, nonferrous metals, and refined oil. Estimates of output in selected years also are made as needed to fill gaps in statistics for other products—for example, some chemicals and construction materials.

On balance, we believe that our samples provide adequate coverage. For industry and agriculture—the two largest sectors of origin—approximate shares of gross output represented by the samples can be calculated.[44] The industrial sample covers nearly 60 percent of civilian output in the base year (1982), with branch coverage ranging from a high of about 80 percent for electric power to a low of roughly 35 percent for nonferrous metals. The sample for agriculture covers approximately 90 percent of base-year output. Coverage of transportation is also judged quite complete—about equal to that in agriculture in the base year—although we have not made a numerical estimate for this sector.

***Kinds of Data in Samples.*** The predominant kind of data in the sample for each sector of origin generally points to the direction of any error in estimates of the sector's growth. In the West, most experts believe that data on current values of output, deflated by price indexes as accurate as those available for Western countries, provide better estimates of growth than data on quantities of output, weighted by prices of a fixed year. The principal reason is that deflated values permit better coverage of new products and of improvements in quality than quantity indexes do, especially when innovation is rapid. Also, price indexes estimated from samples are generally believed to represent changes in the prices of excluded goods better than sample quantity indexes represent excluded quantity changes.[45]

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[41] Western specialists have written many books and journal articles on the selection and refinement of estimating methods. An annotated bibliography of much of the literature is provided in Dan Usher, *The Measurement of Economic Growth* (New York: Columbia University Press, 1980), in the notes at the end of each chapter.

[42] We have made a number of efforts—most recently in *USSR: Measures*—to alert users of GNP estimates to potential measurement problems. For earlier discussions of such problems, see Stanley H. Cohn, "National Income Growth Statistics," and Rush V. Greenslade, "Industrial Production Statistics in the USSR," in Vladimir G. Treml and John P. Hardt, eds., *Soviet Economic Statistics* (Durham, N.C.: Duke University Press, 1972), chapters 5 and 7.

[43] Products for which we have not yet been able to derive base-year prices, such as various kinds of household chemicals, are excluded also.

[44] The calculations here are updates of similar estimates for 1970, reported in *USSR: Measures*, pp. 207-209, 257-258.

Official Soviet price indexes are sparse, however, and Western economists have found many of them unreliable.[46] Moreover, data on current values often are not published. This leaves us with a choice between:

- Data on quantities of output in physical units—such as tons, items, or square meters—which are multiplied by base-year prices to obtain values. These statistics are generally considered reliable indicators of physical volume, but they do not capture the full extent of changes in product mix and quality.
- Data on values of output in prices officially described as "comparable," which are taken directly from Soviet statistical yearbooks. Almost all Western experts, and now most Soviet economists, believe that these statistics overstate growth because practices for pricing new products in the USSR exaggerate the extent of quality improvements.

*Quantity Data.* Over the years, Western inquiries into the reliability of Soviet official statistics generally have found physical quantity data to be acceptable.[47] Producing enterprises have incentives to distort their reports to statistical authorities because a substantial share of the incomes of workers and managers depends on reported output. Nonetheless, the Western studies have concluded that the extent of distortion in reporting usually is limited, in part by periodic audits and by penalties for falsification. There are exceptions—for example, the recent scandal over the exaggeration of cotton production statistics in Soviet Central Asia.[48] As in that case, most of the distortions are believed to involve overstatement of output—especially to enable enterprises to claim fulfillment of production plans. On the other hand, understatement can also occur—for example, when managers try to hold down targets in future plans.

Even if levels of output are distorted, estimates of growth based on these levels can remain accurate if the extent and direction of misreporting do not change over time. Some thirty years ago, Alec Nove formulated a "law of equal cheating," hypothesizing that, "Over the economy as a whole, there is no reason to suppose that Soviet managers and their accountants falsify more in one year than in another, so the *rate of growth* is unlikely to be exaggerated on that account." Subsequent research by Grossman indicated that incentives and opportunities for cheating were subject to year-to-year variations but that information on the quantitative effects of such variations was lacking.[49]

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[45] See T.P. Hill, *The Measurement of Real Product: A Theoretical and Empirical Analysis of the Growth Rates for Different Industries and Countries* (Paris: Organization for Economic Cooperation and Development, 1971), pp. 25-26, 41-42, 58-59; and Usher, *The Measurement of Economic Growth*, chapter 8. The advantages of deflated value data also are discussed in *USSR: Measures*, pp. 42-43.

But even when deflated value data are widely available, as they are in the United States, measurement problems are not eliminated. Until a few years ago, for example, in the absence of a satisfactory price index for computers, the Department of Commerce assumed that US computer prices had not changed. When a new index was developed, it showed that computer prices had declined sharply (at an average annual rate of 14 percent between 1972 and 1984), so that real growth of computer output had been underestimated. Some economists are now criticizing the new index, however, arguing that computer prices declined at only about half the rate estimated by Commerce. See "Revised Estimates of the National Income and Product Accounts of the United States, 1929-85: An Introduction," *Survey of Current Business* (December 1985): pp. 16-17; and "Gross Product by Industry: Comments on Recent Criticisms," *Survey of Current Business* (July 1988): pp. 132-133.

[46] For a comprehensive discussion of Soviet price indexes, see Morris Bornstein, "Soviet Price Statistics," in Treml and Hardt, eds., *Soviet Economic Statistics*, chapter 16.

[47] Two recent studies—both drawing on interviews of Soviet emigres—are Susan J. Linz, "Managerial Autonomy in Soviet Firms," *Soviet Studies* (April 1988): pp. 175-195; and Stephen Shenfield in collaboration with Philip Hanson, "State Statistical Work in the USSR: Findings from Interviews with Former Soviet Statistical Personnel" (Washington: National Council for Soviet and East European Research, 1986). For evaluations of a wide variety of Soviet statistics, including quantity data on industrial and agricultural output, see Treml and Hardt, eds., *Soviet Economic Statistics*, especially chapters 1 and 7-12. An earlier standard reference on industrial statistics is Gregory Grossman's *Soviet Statistics of Physical Output of Industrial Commodities: Their Compilation and Quality* (Princeton: Princeton University Press, 1960).

[48] A chronology of the scandal appears in *Business Week* (6 July 1987): p. 45.

[49] Both the quotation of Nove and Grossman's conclusions are from Grossman's *Soviet Statistics of Physical Output*, p. 133.

In any event, the effects on estimates of growth over longer periods still may be small if distortions in annual changes are in opposite directions.

In the last few years, some Western analysts have claimed that Soviet statistics on physical quantities of output have become increasingly overstated.[50] Anecdotal evidence of exaggeration in such measures does seem to be surfacing with increasing frequency in the Soviet press. This evidence, however, may reflect the leadership's policies more than the accuracy of the basic data. Official scrutiny of statistical reporting has tightened as a result of a series of campaigns against corruption, and unofficial criticism of statistics has surged in response to Gorbachev's policy of *glasnost*. Still, information of the kind that would be needed to adjust for changes in the accuracy of measures of physical output remains as inadequate and unconvincing as it was at the time of Grossman's study. Like Western researchers, moreover, Soviet critics of official statistics generally accept these physical quantity data while rejecting output measures in comparable prices.[51]

Nonetheless, growth estimates based on physical quantity data fail to capture the full extent of changes in product mix and quality, including the introduction of new products as an extreme case. In a growing economy, these changes typically are improvements, although there are exceptions—in the USSR, primarily raw materials, such as coal and iron ore.

Ideally, quantity data should be detailed enough to reflect changes in product mix but still comprehensive enough to provide good coverage of output. Unfortunately, data that meet both of these requirements are seldom available. We do select and adjust the quantity data used in our samples, however, in an effort to capture as many changes in product mix and quality as possible. For example:

- Sample data are used in as much detail as possible—including estimated breakdowns for some data published only in summary form. Trucks and passenger cars, for instance, are disaggregated by model.

- Standardized units of physical measure are used whenever available—such as for fertilizers, generators, and turbines.

- Explicit adjustments for quality are made in some cases, such as coal, cement, and flour.

*Value Data.* Soviet value data in so-called comparable prices are supposed to serve the same function as Western economic statistics in constant prices—that is, to measure output excluding the effects of price changes (see inset). In the USSR, however, comparable prices include a substantial degree of disguised inflation, largely because of two features of the way prices are established for new products.[52]

First, producing enterprises benefit financially from making minor alterations in familiar products and using the "improvements" as an excuse for increasing prices. The increases are then reflected in output

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[50] See, for example, Richard E. Ericson, "The Soviet Statistical Debate: Khanin vs. TsSU," paper presented at Hoover Institution-RAND Corporation Conference on the Defense Sector and the Soviet Economy (Stanford University, 23-24 March 1988; revised May 1988), p. 10.

[51] One of the most prominent Soviet critics, Grigoriy Khanin, has made extensive use of physical measures of industrial production and has endorsed official indexes of agricultural output and railroad transportation. The only quantity data that he explicitly rejects are those for truck transportation. See G.I. Khanin, "Al'ternativnyye otsenki rezul'tatov khozyaystvennoy deyatel'nosti proizvodstvennykh yacheyek promyshlennosti" (Alternative Estimates of the Results of the Economic Activity of Productive Units of Industry), *Izvestiya akademii nauk SSSR: seriya ekonomicheskaya* (No. 6, 1981): pp. 64, 72; and "Puti sovershenstvovaniya informatsionnogo obespecheniya svodnykh planovykh narodnokhozyaystvennykh raschetov" (Ways of Improving the Information Supply for Aggregate National Economic Planning Calculations), *Izvestiya akademii nauk SSSR: seriya ekonomicheskaya* (No. 3, 1984): p. 60.

[52] Inflation in the prices of new products has been discussed widely in Western literature on the Soviet economy. See, for example, Joseph S. Berliner, *The Innovation Decision in Soviet Industry* (Cambridge, Mass.: MIT Press, 1976), pp. 235-360. This subject is also discussed in *USSR: Measures*, pp. 13, 44, 181, 213-214, and the sources cited there.

For a skeptical view of Western estimates of substantial disguised inflation in the USSR, see Steven Rosefielde, *False Science: Underestimating the Soviet Arms Buildup*, revised second edition (New Brunswick, N.J.: Transaction Books, 1987), pp. 101-148. Recently, however, Rosefielde has expressed willingness to accept the possibility of rather high rates of disguised inflation. See his "The Soviet Economy in Crisis: Birman's Cumulative Disequilibrium Hypothesis," *Soviet Studies* (April 1988): pp. 222-244.

### ***Comparable Prices, Soviet Style***

*Prices are set administratively in the USSR and are changed only infrequently for standard products, which include most goods. Comparable prices (*sopostavimyye tseny*), which are used along with current prices in reporting output to the statistical authorities, are set for a given base year—usually the year of a general price revision:*

- *For goods in series production in the base year, comparable prices are simply list prices (*postoyannyye tseny*) of that year.*
- *For products introduced later, comparable prices are the first list prices established—at the time the decision to begin series production is taken. No adjustment is made for any changes that may have occurred since the base year in the costs of inputs, which play a major role in determining prices.*
- *For products too new or unique to have entered series production, the only prices available are temporary prices (*vremennyye tseny*) or one-time prices (*razovyye tseny*). By default, these prices are accepted as comparable, even though they are supposed to be reduced when or if series production begins.*

*Over the years, Soviet economists have provided many examples of inflated prices for new products. The following illustration is recent and striking:*

> *In the last five-year plan period, machine builders mastered the production of approximately 3,000 types of new products per year on average (for comparison: all other branches of industry, taken together, mastered only 700 types per year). Naturally, there are no prices for these items on the price lists; they have to be established from scratch.*
>
> *The price usually grows to a much greater extent than the user characteristics of the product improve. An ordinary lathe manufactured by the capital's "Krasnyy proletariy" plant, say, costs about 5,500 rubles. The same lathe with a numerical programming mechanism costs 40,000, and one fitted with a robot as well costs 70,000 rubles. How much more productive is a machine supplied with all the wonders of technology than an ordinary one? Half again as productive.*
>
> *The permanent price . . . usually differs little from the temporary one.*[a]

[a] *Vasiliy Selyunin and Grigoriy Khanin, "Lukavaya tsifra" (Cunning Figures),* Novyy mir *(No. 2, 1987): p. 182.*

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reported to the statistical authorities in comparable prices, as well as in revenues from purchasers of new products. At the same time, production of older, cheaper items can be stopped, leaving purchasers with little choice but to accept the new ones. Opportunities to switch suppliers are rare under Soviet conditions of few markets and chronic shortages. Besides, enterprises that pay higher prices for inputs often can make minor changes in their own products and thus pass the inflated costs along to their customers.

Second, even products incorporating genuine improvements are assigned high prices at first to cover the research, development, and other costs of the initial stages of production. High temporary prices are supposed to be replaced by lower permanent prices within a few years. Typically, however, producing enterprises attempt to postpone any reduction as long as possible and keep the permanent price as high as possible.

Soviet value data are published regularly for a number of products, mostly machinery. Despite their shortcomings, we use these value data in two kinds of circumstances:

- When measures of output in physical units are unavailable.
- When improvements in product mix and quality would be seriously understated by physical measures.

For machinery, where these conditions often prevail, value data make up roughly 40 percent of our sample in the base year. The shares of value data in the samples for other branches of industry are smaller—ranging from zero for metals, energy, construction materials, and processed food to 30 percent for light industry.[53]

***Proxies for Value Added.*** As mentioned earlier (in the overview of estimating methods), we use proxies to estimate the real growth of value added in all sectors of origin except agriculture. The most important—and the most reliable—of these proxies is gross output, on which our estimates for industry, transportation, and trade are based.

*Gross Output.* Because gross output includes intermediate inputs as well as value added, its growth will differ from value-added growth if the proportions of these components change. Residual calculations of value added itself—as the difference between gross output and intermediate inputs—also are subject to errors, however, if the output and input data are inaccurate. Research by T. P. Hill has indicated that using gross output as a proxy is likely to provide more accurate results than calculating value added as a residual (1) when there is no clear evidence that the proportions of intermediate inputs and value added have changed and (2) when estimates of intermediate inputs are subject to large errors.[54]

For our estimates of Soviet industrial growth, the effects of changes in the proportions of value added and intermediate inputs should be minimized by the detail in which value-added weights are available—for subbranches such as machine tools and automobiles, as well as for branches such as machinery. Moreover, rough calculations of the growth of value added as a residual matched gross-output proxies reasonably well during 1959-72.[55]

Studies of US industrial growth also suggest that estimates based on gross-output proxies—which are constructed by the Federal Reserve Board—have been quite close to residual estimates of value added—which are made by the Department of Commerce. Jack Gottsegen and Richard Ziemer found that the average annual growth of all manufacturing industries during 1948-64 was 4.2 percent using gross-output proxies—less than half a percentage point faster than the rate of 3.8 percent based on value added. For most individual industries, rates of increase estimated using both methods were within a percentage point of each other.[56]

*Intermediate Inputs.* For the construction sector, intermediate inputs—mostly of industrial products—are used as a proxy for value added. In general, this proxy is not considered as reliable as gross output, partly because input data often are subject to greater uncertainty than output data. Aside from data problems, moreover, gross output includes value added, but intermediate inputs and value added are mutually exclusive measures.[57] Nonetheless, past tests of the procedures we use—during their initial development by Raymond Powell and, later, for our estimates of GNP in 1970 prices—have shown them to be satisfactory.[58] More recently, Bergson has found new support for the proxy by observing that the price changes implied by our estimates of construction growth are consistent with independent calculations of price indexes from Soviet data on construction costs and profits.[59]

[53] The calculations here are updates of similar estimates for 1970, reported in *USSR: Measures*, p. 215.

[54] *The Measurement of Real Product*, pp. 19-22, 57-58, 98-105, 111-112, 118. Hill's results are also discussed in *USSR: Measures*, pp. 44-45, 186.

[55] These residual calculations were made possible by the availability of input-output tables in 1970 prices for 1959, 1966, and 1972. See *USSR: Measures*, pp. 211-212.

[56] See Jack J. Gottsegen and Richard C. Ziemer, "Comparison of Federal Reserve and OBE Measures of Real Manufacturing Output, 1947-64," in John W. Kendrick, ed., *The Industrial Composition of Income and Product*, Studies in Income and Wealth, Vol. 32 (New York: Columbia University Press, 1968), pp. 225-347. In a paper discussed below, Michael Boretsky obtained similar results for the 1959-77 period. See "The Tenability of the CIA Estimates of Soviet Economic Growth," *Journal of Comparative Economics* (December 1987): pp. 524-525. More recently, the Department of Commerce reported that 1972-85 growth rates based on gross output and value added remained quite close but did not examine the reasons for differences as extensively as Gottsegen and Ziemer did. See "Gross Product by Industry," p. 133.

[57] For further elaboration of this point, see Hill, *The Measurement of Real Product*, pp. 21-22.

[58] See Raymond P. Powell, "An Index of Soviet Construction, 1927/28 to 1955," *Review of Economics and Statistics* (May 1959): pp. 170-177; and *USSR: Measures*, pp. 83-87.

[59] "On Soviet Real Investment Growth," *Soviet Studies* (July 1987): pp. 411-412, 419.

*Labor Inputs.* Our estimates of growth in a number of service sectors are based on labor inputs—measured in work hours—as a proxy for value added. This proxy almost certainly understates growth because it does not reflect any gains made in labor productivity. Moreover, our data on labor inputs are not detailed enough to reflect changes in the composition and quality of the labor force, such as a rising proportion of more skilled and educated workers. Given the sparsity of Soviet data on services, however—partly because of the Marxian view that all services except those contributing directly to material output are "nonproductive"—we have few alternatives.

Even in Western countries, labor inputs are the only data readily available for some service sectors—mainly education and government services. Most Western countries, however, are able to measure these inputs in ways that capture at least some changes in the composition of the labor force. Data on deflated wages often are used instead of data on work hours, and even when this is not the case, Western data are more detailed than those for the USSR.[60]

***Criticisms of Estimates.*** While we would like to minimize errors of all kinds in our estimates of GNP growth by sector of origin, perhaps the most important task is to minimize bias—that is, errors mainly in one direction. The possibility of biased estimates—whether too high or too low—is greatest for industry and services, so it is not surprising that criticisms have focused primarily on these sectors.

*Industry.* Our estimates of Soviet industrial growth include sources of both understatement and overstatement, and they have been challenged on both counts. The most detailed charges of downward bias have come from Michael Boretsky, who claims that we rely too heavily on quantity data and that our sample does not represent the range of industrial output adequately.[61] In criticizing our reliance on quantity data, however, he mentions only in passing our use of value data—especially for machinery. And he barely acknowledges our efforts to make the quantity data we use reflect as many changes in product mix and quality as possible.

In an indirect test, Boretsky has used our sample and methods—with some modifications—to calculate the growth of industry in the United States and the Federal Republic of Germany. Because his calculations imply substantially lower growth rates than indicated by official statistics for those countries, he faults our procedures. We would not expect a sample designed for Soviet industry, however, to represent US and West German output well. The vast differences between the USSR and these Western countries—in economic systems and policies, levels of economic development, and endowments of natural resources—are likely to result in major differences in the mix of output.

Furthermore, Boretsky goes on to implicitly endorse official Soviet aggregate measures of industrial growth. His argument is based on the observation that differences between official growth rates for the United States and the Federal Republic of Germany—which are widely regarded as highly reliable—and his calculations for these countries are similar to differences between Soviet official growth rates and our estimates. In presenting this case, Boretsky ignores the voluminous record of Western and Soviet criticism of the USSR's official statistics—especially on growth in machinery output.

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[60] See Organization for Economic Cooperation and Development, Department of Economics and Statistics, *Measurement of Value Added at Constant Prices in Service Activities* (Paris: Organization for Economic Cooperation and Development, 1987), pp. 6-14; and Hill, *The Measurement of Real Product*, pp. 56-57.

[61] "The Tenability of the CIA Estimates of Soviet Economic Growth," *Journal of Comparative Economics* (December 1987): pp. 517-542. Also see John Pitzer's rebuttal, "The Tenability of the CIA Estimates of Soviet Economic Growth: A Comment," *Journal of Comparative Economics* (September 1989).

The criticisms of other Western economists have been less severe. Padma Desai, for example, has pointed out sources of downward bias in our estimates of industrial growth but also acknowledged upward bias in official Soviet figures. See "Total Factor Productivity in Postwar Soviet Industry and Its Branches," *Journal of Comparative Economics* (March 1985): pp. 18-20. In some of her work, she has used averages of CIA and Soviet series. See "On Reconstructing Price, Output, and Value-Added Indexes in Postwar Soviet Industry and Its Branches," *Oxford Bulletin of Economics and Statistics* (February 1978): pp. 60-62.

Indeed, the shortcomings of these official statistics have received renewed attention in the last few years. Several Soviet economists—notably Vasiliy Selyunin and Grigoriy Khanin—have criticized statistics on the growth of industry overall and machinery in particular.[62] The charges of these recent critics are similar to those raised by an older generation of Soviet experts in the 1960s, and even earlier in the West.[63]

In the era of *glasnost* some of the critics have been able to go beyond their predecessors in publishing alternative estimates of growth that cover relatively broad categories of output and long periods of time. It appears, however, that these alternative estimates are based so extensively on output data in physical units that they are unable to capture changes in product mix and quality.[64]

Fyodor Kushnirsky has suggested that Soviet economists may neglect quality improvements because product changes are initiated by producers in the USSR and often are not useful to purchasers.[65] For example, manufacturers may increase production of large-capacity trucks when the primary needs of the transportation system are for small and medium-size vehicles. Even though purchasers in the Soviet economy have few choices, however, some improvements in quality undoubtedly are genuine. One Soviet expert on machinery has cited such improvements in support of his view that "It is not possible, of course, to judge growth of the production of machinery and equipment only by the number of units produced." [66]

*Services.* Boretsky and Mark Prell both maintain that our estimates of the growth of services are too low. Their arguments are based on our use of quantity data in estimates of housing growth and of labor inputs as a proxy for value added in several other service sectors. We have acknowledged that these estimates are understated, but we do not believe the degree of bias is as great as Boretsky and Prell claim.[67]

As in his criticism of our estimates of industrial growth, Boretsky's judgment is based on his application of our estimating procedures to US and West German data.[68] Prell also tests our procedures using

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[62] For Western discussions of the work of Selyunin and Khanin, see CIA, *Revisiting Soviet Economic Performance Under Glasnost: Implications for CIA Estimates* (SOV 88-10068, September 1988); Richard E. Ericson, "The Soviet Statistical Debate"; Vladimir Kontorovich and Boris Rumer, *Inflation in the Soviet Investment Complex* (Princeton Junction, N.J.: Command Economies Research, May 1988); and Fyodor Kushnirsky, "New Challenges to Soviet Official Statistics: A Methodological Survey," in CIA Conference Report, *The Impact of Gorbachev's Policies on Soviet Economic Statistics* (SOV 88-10049, July 1988). The CIA and Kontorovich-Rumer papers also discuss the work of other Soviet critics in some detail.

[63] For a review of the early Soviet criticisms, which focused largely on statistics on machinery output and investment, see Abraham S. Becker, "The Price Level of Soviet Machinery in the 1960s," *Soviet Studies* (July 1974): pp. 363-379. Early Western assessments of Soviet statistics are cited and summarized in Abram Bergson, *The Real National Income of Soviet Russia*, pp. 3-4.

[64] The Selyunin-Khanin estimates also make use of a number of shortcut procedures, such as estimating Soviet industrial output (by sector) on the basis of the relationship between output and electricity use in the United States and actual Soviet electricity use.

[65] "New Challenges to Soviet Official Statistics," pp. 19-20. Kushnirsky's own research has indicated significant improvements in the quality of passenger cars—enough to explain most of the increases in their wholesale and retail prices during 1976-82 *(ibid.)*.

When GNP is valued at factor cost, measures of quality improvement should be based on increases in the costs of producing higher-quality output. Such measures should be understood, however, to apply only to improvements for which purchasers are willing to pay.

[66] D.M. Palterovich, "Problemy ispol'zovaniya strategicheskikh i takticheskikh rezervov mashinostroyeniya" (Problems of Using the Strategic and Tactical Reserves of Machine Building), *Ekonomika i matematicheskiye metody* (No. 4, 1987): p. 591.

A CIA study also supports the view that the quality of Soviet machinery has improved. The results of this study indicate that the quality of several types of construction machinery improved significantly from 1960 to 1973—although price increases often exceeded quality improvements. See CIA Research Paper, *An Analysis of the Behavior of Soviet Machinery Prices, 1960-73* (ER 79-10631, December 1979).

[67] See, for example, *USSR: Measures*, pp. 112-113, 344-345, 349.

[68] Boretsky has also criticized our estimates of construction growth, arguing that he obtained inaccurate results when applying them to the US construction sector. See "The Tenability of the CIA Estimates," pp. 526-527, 532.

US data and then goes on to develop his own estimates of services growth in the USSR.[69] His estimates for housing are based on official Soviet data on the value of the stock of housing capital in comparable prices. Like Soviet data on output in such prices, these housing data overstate growth because they include disguised inflation.

For the other services he considers, Prell uses inputs of labor and capital combined as a proxy for value added, assuming that the productivity of these combined inputs (factor productivity) is constant. His labor data are the same as ours, and his capital data again are official Soviet stock values in comparable prices.

His assumption of constant factor productivity implies faster output growth than our assumption of constant labor productivity because capital inputs have grown faster than labor inputs. According to our estimates, however, factor productivity in the Soviet economy overall and in many individual sectors has been decreasing since the early to middle 1970s. Prell's procedures thus provide a way to allow for gains in labor productivity, but we believe that both his productivity assumption and his use of inflated Soviet capital data overstate the growth of services.

***Potential Impact of Errors.*** Rough impressions of the quantitative importance of sources of upward and downward bias in our estimates of sectoral growth can be obtained from comparisons with alternative estimates. As in the preceding section, we focus on industry and services because we are more concerned about bias than about other errors (see inset on page 38). While our estimates for agriculture and the smaller sectors, like transportation and trade, are subject to inaccuracies, there is no reason to expect that they are biased.

*Industry.* Within industry, our growth estimates are likely to be understated for several branches where samples consist primarily of quantity data, but probably overstated for the machinery branch, where the sample includes a large share of Soviet value data in comparable prices.

The growth of any branch whose sample is dominated by quantity data may be biased downward. The degree of bias is likely to be minor, however, unless improvements in the mix and quality of output are rapid. We can get a sense of the potential underestimation by comparing our growth rates for the nonmachinery branches with official Soviet statistics (see table 8).[70] If we view the official rates tentatively as upper bounds, this comparison suggests that there is little bias in our estimates for fuels and electric power, where rapid improvements in product mix and quality would not be expected. The branches for which underestimation is likely to be greatest are chemicals and, to a lesser extent, construction materials and wood products.

For the machinery branch, our estimates of growth probably are somewhat overstated, although they are well below official Soviet figures (table 8). We can roughly gauge the possible degree of overstatement by comparing our growth rates with alternative Western and Soviet estimates that rely more heavily on quantity data (see table 9).[71] Using a sample of civilian machinery based entirely on quantity data, Vladimir Treml has estimated average annual growth at rates 1 to 2 percentage points below ours for civilian machinery.[72] These differences in growth rates appear reasonable as rough upper limits on the degree of overstatement in our estimates.

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[69] *The Role of the Service Sector in Soviet GNP and Productivity Estimates* (Ph.D. dissertation, Massachusetts Institute of Technology, 1987); and "The Role of the Service Sector in Soviet GNP and Productivity Estimates," *Journal of Comparative Economics* (September 1989). Also see the response by Laurie Kurtzweg, "The Role of the Service Sector in Soviet GNP and Productivity Estimates: A Comment," *Journal of Comparative Economics* (forthcoming, December 1989).

[70] Because of differences in the construction of our estimates and official Soviet indexes, the results of this comparison should be interpreted with caution. Our base year (1982) is fixed, for example, while Soviet indexes reflect a series of linked base years (1952, 1955, 1967, 1975, and 1982). Also, we use value-added weights for branches of industry (such as machinery) and subbranches (such as automobiles), while Soviet indexes are based on gross-output weights.

[71] Special caution is required in interpreting the unofficial Soviet estimates because little is known about the methods on which they are based.

[72] Treml's estimates of output growth are one result of a larger study of changes in machinery prices. See "Price Index for Soviet Machinery, 1965-1986" (manuscript, September 1988).

## Table 8
## USSR: Comparison of CIA Estimates of Industrial Growth With Official Soviet Statistics, 1951-87

*Percent average annual rates*

| | 1951-60 | 1961-70 | 1971-80 | 1981-87 | 1951-87 |
|---|---|---|---|---|---|
| **Total industry** | | | | | |
| CIA [a] | 8.6 | 6.3 | 4.0 | 2.2 | 5.5 |
| Soviet [b] | 11.7 | 8.6 | 5.9 | 3.9 | 7.8 |
| **Ferrous metals** | | | | | |
| CIA [a] | 9.5 | 6.4 | 2.5 | 1.3 | 5.2 |
| Soviet [b] | 10.4 | 6.8 | 3.5 | 1.9 [c] | 6.3 [c] |
| **Fuels** | | | | | |
| CIA [a] | 9.3 | 6.0 | 4.2 | 1.4 | 5.5 |
| Soviet [b] | 9.3 | 6.2 | 4.4 | 1.6 | 5.6 |
| **Electric power** | | | | | |
| CIA [a] | 12.3 | 9.7 | 5.8 | 3.3 | 8.1 |
| Soviet [b] | 13.7 | 10.6 | 6.1 | 3.7 | 8.9 |
| **Machinery** | | | | | |
| CIA [a] | 7.4 | 6.6 | 5.1 | 2.4 | 5.6 |
| Soviet [b] | 15.4 | 12.1 | 9.9 | 6.3 | 11.2 |
| **Chemicals** | | | | | |
| CIA [a] | 10.7 | 10.0 | 5.6 | 3.8 | 7.8 |
| Soviet [b] | 14.7 | 13.3 | 8.1 | 5.0 | 10.6 |
| **Wood, pulp, and paper** | | | | | |
| CIA [a] | 6.4 | 2.7 | 1.0 | 2.7 | 3.2 |
| Soviet [b] | 8.0 | 5.3 | 3.3 | 3.6 | 5.2 |
| **Construction materials** | | | | | |
| CIA [a] | 15.7 | 5.9 | 3.1 | 2.3 | 7.0 |
| Soviet [b] | 18.4 | 8.6 | 4.5 | 3.4 | 9.0 |
| **Light industry** | | | | | |
| CIA [a] | 8.0 | 4.5 | 2.5 | 1.6 | 4.3 |
| Soviet [b] | 9.6 | 5.5 | 4.0 | 1.5 | 5.4 |
| **Food industry** | | | | | |
| CIA [a] | 9.1 | 6.4 | 2.7 | 1.1 | 5.1 |
| Soviet [b] | 8.9 | 6.6 | 3.4 | 3.8 | 5.8 |

[a] Growth of total industry is calculated from indexes of branch growth, weighted by value added at 1982 factor cost. Branch growth is calculated from indexes of gross output by subbranch, weighted by value added in 1982 producers' prices (established prices, excluding turnover taxes and subsidies).

[b] Growth of total industry and its branches is calculated from values of gross output in comparable producers' prices (established prices, excluding turnover taxes and subsidies) of a series of linked base years (1952, 1955, 1967, 1975, and 1982).

[c] End year is 1984.

### *Cumulative Impact of Bias*

*Any judgment about how much bias is acceptable in our estimates of the growth of GNP and its major components must be subjective. In this paper, biases up to plus or minus 0.5 percentage point in average annual rates of change are considered acceptable, given the general difficulty of accurate estimation. If a 0.5 percentage point bias persisted over the entire 37-year period covered here, however, its cumulative impact on the index of growth would be fairly substantial—an overstatement or understatement of 20 percent (see table). Potential biases of 1 or even 2 percentage points per year are treated as provisionally acceptable in estimates of the growth of some GNP components, but not of total GNP. When biases are this large, however, we recognize the need for further research on improving our estimates.*

| *Bias in Average Annual Growth Rate* [a] | *Index* [b] *of Cumulative Effect After* | | | |
|---|---|---|---|---|
| | *10 Years* | *20 Years* | *30 Years* | *~37 Years* |
| *0.1* | *101* | *102* | *103* | *104* |
| *0.2* | *102* | *104* | *106* | *108* |
| *0.3* | *103* | *106* | *109* | *112* |
| *0.4* | *104* | *108* | *113* | *116* |
| *0.5* | *105* | *110* | *116* | *120* |
| *1.0* | *110* | *122* | *135* | *145* |
| *1.5* | *116* | *135* | *156* | *173* |
| *2.0* | *122* | *149* | *181* | *208* |

[a] *Percentage points.*
[b] *Correct index = 100.*

*Services.* As mentioned earlier, our estimates of growth in some service sectors are almost certainly understated. The growth of housing is estimated from data on changes in the total stock of living space, without adjustment for qualitative improvements. Although the rate of quality change probably has not been rapid, it undoubtedly has been positive. Growth also is likely to be underestimated for health, education, and government services, where we use labor inputs as a proxy for value added.

**Table 9**
**USSR: Comparison of CIA and Alternative Estimates of Machinery Growth, 1961-85**

*Percent average annual rates*

| | CIA [a] | Treml [b] | Selyunin and Khanin [c] | Val'tukh and Lavrovskiy [d] |
|---|---|---|---|---|
| 1961-65 | 7.1 | NA | 8.7 | 10.7 |
| 1966-70 | 6.2 | 6.4 | 5.5 | 5.9 |
| 1971-75 | 7.2 | 5.2 | 5.1-6.2 | 4.7 |
| 1976-80 | 3.0 | 2.7 | 2.0-3.1 | 1.2 |
| 1981-85 | 2.0 | 2.3 | 0.2-1.2 | NA |
| 1961-85 | 5.1 | NA | 4.3-4.9 | NA |
| 1966-80 | 5.4 | 4.8 | 4.2-4.9 | 3.9 |

[a] Growth of total machinery, calculated from indexes of gross output by subbranch, weighted by value added in 1982 producers' prices (established prices, excluding turnover taxes and subsidies).
[b] Growth of civilian machinery, calculated from indexes of gross output by subbranch, weighted by gross output in 1982 producers' prices (established prices, excluding turnover taxes and subsidies). See Vladimir G. Treml, "Price Index for Soviet Machinery, 1965-1986" (manuscript, September 1988), p. 83.
[c] Growth calculated by dividing official index of total machinery output by Selyunin and Khanin's index of disguised inflation, presumably for total machinery. See Vasiliy Selyunin and Grigoriy Khanin, "Lukavaya tsifra," *Novyy mir* (No. 2, 1987): pp. 187, 194.
[d] Presumably, growth of civilian machinery. See K.K. Val'tukh and B.L. Lavrovskiy, "Proizvodstvennyy apparat strany: ispol'zovaniye i rekonstruktsiya," *Ekonomika i organizatsiya promyshlennogo proizvodstva* (No. 2, 1986): p. 29.

We believe Prell's estimates of services growth are overstated, but we can tentatively accept them as upper limits on actual rates of increase (see table 10). Doing so implies that our estimates understate the growth of services by at most 3 percentage points per year for housing and by no more than 2 percentage points annually for the sectors where labor inputs are used as a proxy.

**Growth by End Use**

Although estimates of GNP by end use are not used in calculating the growth of total GNP, they ought to portray trends in resource allocation as accurately as

**Table 10**
**USSR: Comparison of CIA and Alternative Estimates of Services Growth, 1951-84**

*Percent average annual rates*

| | 1951-60 | 1961-70 | 1971-80 | 1981-84 | 1951-84 |
|---|---|---|---|---|---|
| **Housing** | | | | | |
| CIA [a] | 4.0 | 3.5 | 2.5 | 2.5 | 3.2 |
| Prell [b] | 7.7 | 5.6 | 5.2 | 4.9 | 6.0 |
| **Education** | | | | | |
| CIA [a] | 2.8 | 4.8 | 2.4 | 0.9 | 3.0 |
| Prell [b] | 4.1 | 5.5 | 3.8 | 2.5 | 4.2 |
| **Health** | | | | | |
| CIA [a] | 4.5 | 3.7 | 2.0 | 1.6 | 3.2 |
| Prell [b] | 5.9 | 4.7 | 4.0 | 3.6 | 4.7 |
| **Science** | | | | | |
| CIA [a] | 10.2 | 7.7 | 4.6 | 1.8 | 6.8 |
| Prell [b] | 7.7 | 6.9 | 4.6 | 2.2 | 5.9 |
| **Government administration** | | | | | |
| CIA [a] | −4.2 | 3.5 | 3.5 | 1.5 | 1.0 |
| Prell [b] | −2.1 | 4.3 | 3.9 | 1.7 | 2.0 |

[a] Estimates cited by Prell, based on earlier data than rest of estimates in this paper.
[b] See Mark Prell, *The Role of the Service Sector in Soviet GNP and Productivity Estimates* (Ph.D. dissertation, Massachusetts Institute of Technology, 1987), pp. 218-224, 231-232.

possible. For several of the components of consumption and investment, our growth estimates reflect some upward or downward bias. Defense growth—which is based on a nearly complete enumeration of Soviet military purchases—also is subject to uncertainty, but we do not believe the errors are predominantly in one direction.

***Consumption.*** Consumption growth almost certainly is overestimated for some components—durable goods in particular—but underestimated for others—chiefly housing, health, and education services. For consumption of goods, our estimates of growth are based on samples of products, mainly using data on:[73]

- Quantities consumed for almost all foods and some soft goods.
- Current values of retail sales, deflated by official Soviet indexes of retail prices, for durables and about 65 percent of soft goods.[74]

Estimates of the growth of food consumption are subject to possible understatement because of the preponderance of quantity data in the sample. Quality improvements probably occur slowly in this case, however, so bias is not likely to be appreciable. In fact, charges of deterioration in the quality of some staples, such as bread, appear fairly regularly in the Soviet press. For soft goods, on the other hand, and especially for durables, estimates of consumption growth probably are biased upward because the Soviet retail price indexes we use to deflate retail sales understate actual inflation.

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[73] For a detailed description of the methods used to estimate consumption growth and a discussion of problems of estimation, see *USSR: Measures*, pp. 337-352.

[74] The sample for soft goods also includes data on the value of clothing production in comparable prices, which are counted here in the 65 percent of the sample attributed to deflated retail sales data.

**Table 11** *Percent average annual rates*

**USSR: Comparison of CIA and Soviet Estimates of Inflation in Retail Prices, 1971-87**

| | CIA [a] | Soviet Research Institutes | | Official Soviet [d] |
|---|---|---|---|---|
| | | Banks [b] | Gosplan [c] | |
| 1971-75 | 1.6 | 2.0 | NA | −0.1 |
| 1976-80 | 1.9 | 2.6 | NA | 0.7 |
| 1981-85 | 2.1 | 2.1 | 1.6 | 1.0 |
| 1986-87 | 2.3 | NA | 3.0 | 1.5 |

[a] Based on retail sales of consumer goods in current and constant 1982 established prices.
[b] Calculated from N. Buzina and V. Volodina, "Milliardy na sbernizhkakh," *Ekonomicheskaya gazeta* (No. 18, 1989): p. 12.
[c] Inflation estimates include changes in retail prices of some consumer services, as well as goods. See A. Shmarov and N. Kirichenko, "Inflyatsionny 'vsplesk': masshtaby i prichiny," *Ekonomicheskaya gazeta* (No. 13, 1989): p. 12.
[d] *Narodnoye khozyaystvo SSSR v 1987 g.* (Moscow: Finansy i statistika, 1988), p. 433; and *Narodnoye khozyaystvo SSSR v 1985 g.* (Moscow: Finansy i statistika, 1986), p. 478.

On balance, then, we suspect that the growth of consumption of goods is overestimated. Recent estimates by Soviet economic research institutes of changes in retail prices provide a rough check on this judgment. These estimates indicate that prices rose at average annual rates of 1.5 to 3 percent between 1970 and 1987 (see table 11). In comparison, the index of retail prices derived from our estimates of goods consumption increased at average rates of 1.5 to 2 percent annually during the same period.[75] The extent to which we underestimate inflation and overestimate real growth probably is less than these figures suggest, however, because the Soviet estimates of price change apparently reflect some improvements in product mix and quality as well as "pure" inflation.

As for consumer services, housing growth on the end-use side of GNP is estimated in the same way as on the sector-of-origin side and so is understated for the same reasons. Estimates of consumption of health and education services, on the other hand, are based on deflated material purchases as well as on the labor inputs used in estimating GNP growth by sector of origin.[76] The inclusion of these purchases offsets at least some of the downward bias that affects the sector-of-origin estimates of growth because the deflator is our estimated index of retail prices, which probably understates inflation.

***Investment.*** Our estimates of investment growth depend mainly on trends in the two largest components of this GNP category: new construction and installation activity and acquisition of new machinery.[77] The new construction component is estimated as total construction activity—based on the sector-of-origin estimates discussed in the preceding section—minus repair of worn out capital stock. Capital repair estimates are derived mainly from budgetary expenditures on repair of plant and equipment, deflated by price indexes for construction and machinery, respectively.[78] This procedure is subject to inaccuracies, as already discussed, but we do not believe that bias is a problem.

We estimate the rate of increase of the machinery component of investment on the basis of official Soviet data in comparable prices, which have been widely criticized by Western and Soviet economists.[79] There is general agreement that these data are subject to some disguised inflation in the prices of domestically produced or imported machinery, or both.

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[75] This index is calculated by comparing our estimates of real consumption of goods purchased through the retail trade network with Soviet retail trade data in current prices. For more information, see *USSR: Measures*, p. 351; and Gertrude E. Schroeder and Barbara S. Severin, "Soviet Consumption and Income Policies in Perspective," in Joint Economic Committee, Congress of the United States, *Soviet Economy in a New Perspective* (Washington: US Government Printing Office, 1976), pp. 631-632, 651.

[76] Material expenditures are included in our estimates of consumption of these services because their costs include the materials used in production as well as labor. Value added, as already pointed out, excludes material costs.

[77] These components make up about three-fourths of the investment category of GNP, which also includes net additions to livestock and capital repair—again consisting of construction activity and machinery acquisition. Official Soviet investment statistics include only new construction and new machinery. As noted earlier, inventory change is part of outlays n.e.c. in our estimates of GNP growth.

[78] For the details of these estimates, see *USSR: Measures*, pp. 117-121. In official Soviet statistics, as in GNP by sector of origin, construction includes both new construction activity and capital repair.

Opinions about the extent of this inflation vary considerably, however. In a survey of unofficial Soviet literature on the subject, Vladimir Kontorovich and Boris Rumer have derived estimates of disguised inflation at average annual rates ranging from 1.5 to 3 percent during the early 1970s and from 3 to 6.5 percent during the late 1970s.[80] Bergson, however, has presented a case for much lower inflation rates—averaging up to 1 percent per year in the early 1970s and at most 3 percent annually in the late 1970s.[81]

In large part, these differences in estimates of disguised inflation depend on judgments about the relationship between official Soviet statistics on machinery investment and machinery output. Kontorovich and Rumer argue that methods of compiling both kinds of statistics are similar enough to be subject to about the same extent of disguised inflation. If they are correct, comparisons of CIA and Soviet estimates of the growth of machinery output (like those in table 8) suggest that such inflation could have a substantial impact on the domestic component of machinery investment.

On the other hand, as Bergson points out, Soviet data on machinery investment have shown considerably slower growth than official statistics on machinery output. In fact, machinery investment has increased at rates quite similar to those of CIA estimates of the output of producer durables—the type of machinery used for investment—when these measures are adjusted to a comparable basis. Moreover, two of the Soviet authors cited by Kontorovich and Rumer have published estimates of inflation in both machinery investment and machinery output, and their inflation rates are lower for investment.[82]

Before comparing machinery investment with our estimates of producer durables output (below), we first adjust the investment measure to subtract imports, which enter investment but not domestic production, and to add exports, which enter domestic production but not investment. Data on imports and exports of machinery are published in official foreign trade yearbooks as values in current foreign trade prices.[83] The uncertainties involved in making these values comparable to those used in Soviet investment statistics are considerable, however. Perhaps the major area of uncertainty concerns the extent to which imports are deflated—fully, partially, or not at all—so we test alternative adjustments in which deflated imports and imports in current prices are subtracted from investment.[84] Further uncertainties arise in converting foreign trade prices to domestic prices [85] and in identifying any lags between imports—or production—of machinery and deliveries to investment.[86]

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[79] The Western articles include Abram Bergson, "On Soviet Real Investment Growth," *Soviet Studies* (July 1987): pp. 406-424; Stanley H. Cohn, "Response to Alec Nove," *Soviet Studies* (April 1981): pp. 296-299; Philip Hanson, "The CIA, the TsSU and the Real Growth of Soviet Investment," *Soviet Studies* (October 1984): pp. 571-581; Hanson's "Soviet Real Investment Growth: A Reply to Bergson," *Soviet Studies* (July 1987): pp. 425-430; Vladimir Kontorovich, "Inflation in the Soviet Investment and Capital Stock Series," *Soviet Studies* (April 1989): pp. 318-329; Kontorovich and Boris Rumer, *Inflation in the Soviet Investment Complex* (Princeton Junction, N.J.: Command Economies Research, May 1988); Alec Nove, "A Note on Growth, Investment and Price Indices," *Soviet Studies* (January 1981): pp. 142-145; Nove's "Reply to Stanley H. Cohn," *Soviet Studies* (April 1981): pp. 296-299; Nove's "Has Soviet Growth Ceased?" *Manchester Statistical Society* (15 November 1983); Nove's "Soviet Real Investment Growth: Are Investment Volumes Overstated? A Reply to Bergson," *Soviet Studies* (July 1987): pp. 431-433; Rumer's "Soviet Estimates of the Rate of Inflation," *Soviet Studies* (April 1989): pp. 298-317; Peter Wiles, "Soviet Consumption and Investment Prices and the Meaningfulness of Real Investment," *Soviet Studies* (April 1982): pp. 289-295.

[80] *Inflation in the Soviet Investment Complex*, pp. 46-58, 63-69.

[81] "On Soviet Real Investment Growth," pp. 408-410, 420.

[82] See V.K. Fal'tsman, *Proizvodstvennyy potentsial SSSR: voprosy prognozirovaniya* (The Productive Potential of the USSR: Problems of Forecasting) (Moscow, Ekonomika, 1987), pp. 72, 138; and Palterovich, "Problemy ispol'zovaniya strategicheskikh i takticheskikh rezervov mashinostroyeniya," p. 590.

[83] These import and export data are for the foreign trade category consisting of machinery, equipment, and transportation facilities, adjusted to exclude passenger automobiles.

**Table 12** *Percent average annual rates*

**USSR: Comparison of Growth of Adjusted Machinery Investment and Producer Durables Output, 1951-87** [a]

| | Machinery Investment Plus Exports and Minus: | | Producer Durables Output |
|---|---|---|---|
| | Deflated Imports | Current-Price Imports | |
| 1951-55 | 9.0 | 10.8 | 11.4 |
| 1956-60 | 13.9 | 13.3 | 12.5 |
| 1961-65 | 10.4 | 9.9 | 9.1 |
| 1966-70 | 8.2 | 8.0 | 7.2 |
| 1971-75 | 7.6 | 6.6 | 8.9 |
| 1976-80 | 6.6 | 5.4 | 4.3 |
| 1981-85 | 3.4 | 1.4 | 3.2 |
| 1986-87 | 5.9 | 5.5 | 2.7 |
| 1951-87 | 8.3 | 7.7 | 7.7 |
| 1966-87 | 6.4 | 5.3 | 5.6 |

[a] See text for discussion of derivation of estimates.

Considering all these uncertainties, average annual growth rates of adjusted machinery investment and producer durables output are quite close (see table 12 and figure 9).[87] This suggests that both measures are subject to similar rates of disguised inflation, which we believe are unlikely to exceed the upper limits proposed by Bergson. As mentioned above (in the discussion of table 9), our estimates of output growth could be overstated by as much as 1 to 2 percentage points per year for civilian machinery, of which producer durables constitute about 85 percent. Thus domestic production could contribute an overstatement of at most 2 percentage points annually to disguised inflation in the entire machinery component of investment. If imports are not deflated, the annual growth of machinery investment could be exaggerated by another percentage point during the 1970s, for which our import price indexes seem fairly reliable. We know very little about changes in the prices of machinery imports in other years, but inflation rates probably were much slower.

Our estimates of total investment growth, therefore, are likely to reflect disguised inflation in the machinery component, but not in the construction component. We tentatively accept Bergson's figure of 3 percentage points per year as an upper limit on overstatement of the growth of machinery investment during the late 1970s. The impact of disguised inflation may have been similar in the 1980s, but it probably was smaller in earlier periods. Machinery constitutes about 40 percent of total investment in the

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[84] For Soviet statements that the imports included in investment are not fully deflated, see the sources cited in Kontorovich and Rumer, *Inflation in the Soviet Investment Complex*, pp. 18-19; and Fal'tsman, *Proizvodstvennyy potentsial SSSR*, p. 27.

[85] We calculate deflators for the 1970s by dividing official values of machinery imports and exports in current prices by values in comparable prices derived from V. Sel'tsovkiy, "Some Economic-Statistical Methods of the USSR Foreign Trade Development Analysis in the Ninth and Tenth Five-Year-Plan Periods," *Foreign Trade* (No. 5, 1982): pp. 37-42. We extend these deflators forward to the 1980s by splicing them to Hungarian price indexes for that nation's imports and exports of machinery.

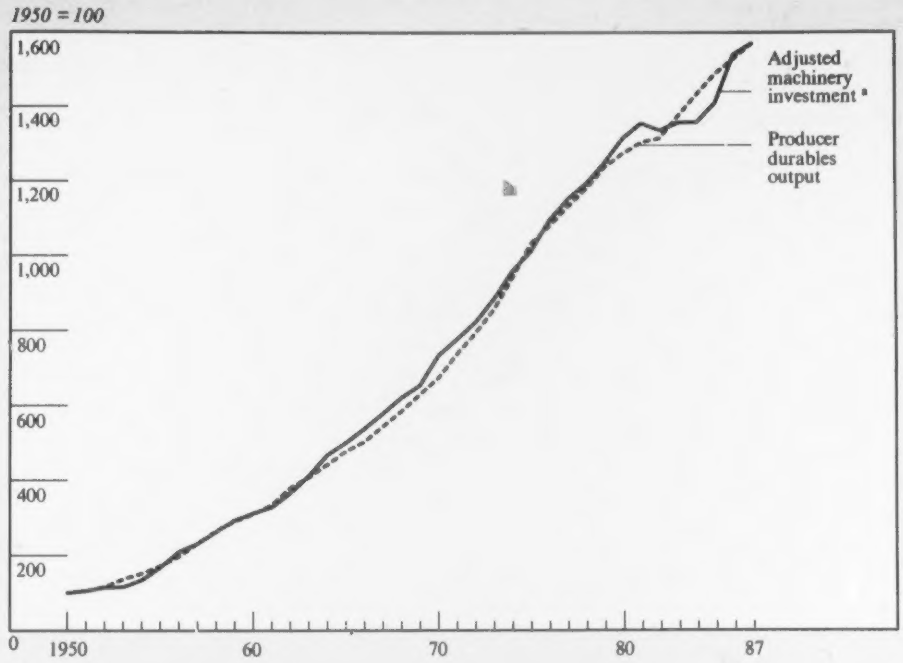
The machinery import deflator is extended backward to the 1950s and 1960s by assuming an average annual inflation rate of 1 percent—about the same as the rate of price change for total imports during those years. The deflator for machinery exports is extended backward to the 1960s by splicing it to indexes of machinery export prices published in N. Mitrofanova, "Tendentsii dvizheniya kontraktnyky tsen v torgovle stran SEV" (Tendencies in the Movement of Contract Prices in the Trade of CEMA Countries), *Voprosy ekonomiki* (No. 8, 1978): pp. 101-106. The prices of machinery exports are assumed not to have changed during the 1950s.

[86] We assume that the values of imports and exports in current domestic prices are the same in all years as the official values in current foreign trade prices. The basis for this assumption is research by Vladimir Treml and Barry Kostinsky indicating that domestic prices of machinery are linked closely to foreign trade prices. Their research also indicates that the closeness of this linkage has not changed much over time. *See Domestic Value of Soviet Foreign Trade: Exports and Imports in the 1972 Input-Output Table*, Foreign Economic Report No. 20 (US Department of Commerce, Bureau of the Census, October 1982), pp. 19-24, 44, 53-57.

[87] Because delays in installing machinery are common in the Soviet economy, we have tested a one-year lag before production or imports reach investment. This lag has little effect on the comparison between adjusted investment and producer durables output, so it is not included in the estimates shown in table 12 and figure 9.

These estimates update the results cited by Bergson, which were first presented in *USSR: Measures*, pp. 203-207.

**Figure 9**
**USSR: Trends in Adjusted Machinery Investment and Producer Durables Output, 1950-87**



[a] Investment plus exports (deflated) minus imports (in current prices).

322222 9-89

base year, so taking 40 percent of 3 percentage points suggests that the upward bias in total investment growth, at its peak, may be slightly over 1 percentage point per year.[88]

Whatever its impact on our estimates, disguised inflation almost certainly affects official Soviet investment statistics to a greater extent. This implies an exaggeration of official data on capital growth, which we use in adjusting GNP to factor cost. The likely result is an overstatement of the capital stocks—and the GNP shares—of sectors with newer, faster-growing equipment relative to those of sectors with older, slower-growing equipment.[89]

**Base-Year Weights**

The factor cost adjustment provides better weights for measuring changes in the Soviet economy's potential to produce goods and services than do established prices. There are some problems, however, in estimating the contributions of labor and capital to base-year GNP by sector of origin, and, as indicated above, we have not yet developed estimates of the contribution of land and other natural resources.

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[88] In this calculation, we assume that the machinery and construction components of capital repair are subject to the same degree of disguised inflation as the respective components of new investment. Machinery comprises about 40 percent of investment regardless of whether capital repair is included or excluded.

[89] Inflation in the growth of capital inputs undoubtedly results also in some understatement of the growth of capital productivity. Productivity estimates, however, are outside the scope of this paper.

***Labor Income.*** Base-year estimates of labor income in established prices are considered quite reliable; data on wage rates and employment are obtained directly from official Soviet sources for most sectors of origin. For the reasons discussed earlier, moreover, incomes in established prices (except for military pay) do not need to be adjusted to factor cost.

But incomes from private economic activity are probably underestimated in some sectors, such as agriculture and various consumer services. For example, Treml has claimed that household purchases of food from collective farm markets in urban areas exceed our estimates by substantial amounts.[90] If correct, this claim implies that household incomes, which must equal outlays, exceed our estimates as well. Further investigation is required, however, because the claim is based on a survey of emigres who were atypical of the Soviet population and who had to rely on their memories of past purchases. Treml also maintains that incomes from privately provided services are higher than we have estimated.[91] So far, the Soviets have published very little information about the valuation and coverage of the data on which his estimates of services are based.

***Returns on Capital and Land.*** As part of the factor cost adjustment, returns on capital are estimated from official Soviet data on stocks of fixed and working capital and an assumed rate of return. We believe that these returns measure capital's contribution to GNP better than the incomes removed from value added in established prices—indirect taxes, subsidies, and reported profits. Still, the estimates are subject to uncertainty on several counts. The valuation of fixed capital—taken from official data on stocks in comparable 1973 prices—is not adjusted for the effects of actual price changes or of disguised inflation between 1973 and 1982.[92]

In the absence of data on the results of actual investment, moreover, the assumed rate of return—12 percent—is based on Soviet guidelines for planning investment projects. Nonetheless, this rate seems reasonable in that it is fairly close to rates of return implied by studies of US productivity. Rates of 8 to 12 percent can be calculated from the work of Dale Jorgenson and his associates on the 1948-79 period, and a rate of 11 percent on capital excluding housing is indicated by Edward Denison's research on the late 1950s.[93]

Judith Thornton has argued, however, that our factor cost adjustment procedure should be revised to substitute reported profits for calculated returns on capital. That is, she agrees that indirect taxes and subsidies should be removed but believes that established prices excluding these elements reflect the values planners attach to output better than adjusted factor costs do.[94] Her argument implies that current price-setting practices provide adequate returns on capital, in part by allowances for profits that include capital charges. This may be the case for some branches of industry—

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[90] See "Purchases of Food From Private Sources in Soviet Urban Areas," Berkeley-Duke Occasional Papers on the Second Economy in the USSR (Paper No. 3, September 1985).

[91] See "Income From Private Sources Recognized by Official Soviet Statistics," Berkeley-Duke Occasional Papers on the Second Economy in the USSR (Paper No. 11, December 1987).

[92] Neither, as mentioned in footnote 35, is there an adjustment for divergences of the 1982 prices of investment goods that go into capital stock from 1982 factor cost.

[93] See Dale Jorgenson, Frank Gollop, and Barbara Fraumeni, *Productivity and U.S. Economic Growth* (Cambridge, Mass.: Harvard University Press, 1987), p. 268; and Edward F. Denison, assisted by Jean-Pierre Poullier, *Why Growth Rates Differ* (Washington: Brookings Institution, 1967), p. 142. For this comparison, we adjust the returns estimated by Jorgenson et al. to exclude depreciation, which has been roughly 3 percent of net capital stock.

[94] Thornton's recommendation amounts to calculating "ruble factor cost" as Bergson did before sufficient capital data were available to estimate "adjusted factor cost." She does not specify, however, whether she believes planners' valuations reflect the production potential of the economy—as the adjusted factor cost standard is intended to do—or the preferences of consumers or planners—as a welfare standard should. See "Twenty-Five Years of Soviet National Income Accounting: From Adjusted Factor Cost to Ultra-Adjusted Factor Cost," *ACES Bulletin* (Fall 1983): pp. 53-67.

**Table 13**
**USSR: Distribution of 1982 GNP by Sector of Origin With Alternative Rates of Return on Capital and Land**

*Percent shares*

| | Present Estimates | Returns on Capital | | | Returns on Land | |
|---|---|---|---|---|---|---|
| | | 8 Percent [a] | 20 Percent [a] | Reported Profits | 5 Percent [b] | 10 Percent [b] |
| **Total GNP** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |
| Industry | 32.4 | 31.9 | 33.1 | 39.2 | 32.0 | 31.6 |
| Construction | 7.8 | 7.9 | 7.7 | 8.1 | 7.4 | 7.0 |
| Agriculture | 20.6 | 21.0 | 20.0 | 17.7 | 22.1 | 23.6 |
| Transportation | 9.5 | 9.4 | 9.7 | 10.2 | 9.1 | 8.6 |
| Communications | 0.9 | 0.9 | 0.9 | 1.2 | 0.8 | 0.8 |
| Trade | 6.5 | 6.0 | 7.2 | 6.0 | 6.2 | 5.8 |
| Services | 20.1 | 20.4 | 19.7 | 15.4 | 20.4 | 20.6 |
| Military personnel | 1.9 | 2.1 | 1.6 | 1.7 | 1.8 | 1.7 |
| Other branches | 0.3 | 0.3 | 0.2 | 0.5 | 0.2 | 0.2 |

[a] Percent of capital stock, net of depreciation.
[b] Percent of GNP at factor cost, allocated arbitrarily to industry (20 percent to fuel and 5 percent to metals), agriculture (50 percent), and services (25 percent to housing).

as suggested by the econometric evidence she cites—but profits in much of the rest of the economy—notably agriculture and services—are artificially low or nonexistent.

In any case, the base-year distribution of GNP by sector of origin changes very little with variations in the rate of return on capital. Adopting Thornton's recommendations for valuing GNP would affect the distribution somewhat more but still would not alter it greatly (see table 13).

At present, we do not estimate returns on land, but William Liefert has developed estimates of rents on agricultural land and on fuel and metal resources that provide some useful information.[95] We can roughly gauge the effects of allowing for rents by assuming hypothetical values of returns on land—5 percent and 10 percent of GNP at factor cost—and arbitrarily allocating these values among industry (fuel and metals), agriculture, and services (housing). The effects of these assumptions on the base-year distribution of GNP by sector of origin are not large (table 13).

**Net Impact of Errors on Total GNP Growth**

Overall, we believe that our estimates of total GNP growth are not far from the mark. Growth is subject to sources of both overestimation and underestimation, so errors in opposite directions offset each other to some extent. To evaluate the reliability of these growth estimates, we compare them below with official and unofficial Soviet figures and then examine the results of rough sensitivity tests of the effects of errors in estimates of various GNP components.

***Comparisons With Soviet Estimates.*** The Soviets publish two official measures—called national income produced and national income used—which are often referred to collectively as net material product (NMP) by Western economists. These measures differ from GNP in definition and coverage by excluding depreciation (the "gross" element of GNP) and services that

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[95] See "The Share of Agriculture in Soviet GNP: 1970-85," *CPE Agriculture Report* (November-December 1988): pp. 22-26.

## Table 14
## USSR: Comparison of CIA Estimates of Overall Growth With Official and Unofficial Soviet Estimates, 1961-87

*Percent average annual rates*

| | CIA Estimates | | National Income Produced | | National Income Used | |
|---|---|---|---|---|---|---|
| | GNP[a] | NMP[b] | Official[c] | Selyunin and Khanin[d] | Official[e] | Aganbegyan[f] |
| 1951-60 | 5.2 | 6.7 | 10.3 | 7.2 | NA | NA |
| 1961-65 | 4.8 | 4.9 | 6.5 | 4.4 | 5.7 | NA |
| 1966-70 | 4.9 | 5.2 | 7.8 | 4.1 | 7.2 | 5.5 |
| 1971-75 | 3.0 | 3.3 | 5.7 | 3.2 | 5.1 | 3.9 |
| 1976-80 | 1.9 | 1.8 | 4.3 | 1.0 | 3.8 | 2.1 |
| 1981-85 | 1.8 | 1.6 | 3.6 | 0.6 | 3.1 | 0.3 |
| 1986-87 | 2.7 | 2.4 | 3.2 | 2.0 | 2.4 | NA |
| 1951-85 | 3.8 | 4.3 | 6.9 | 3.9 | NA | NA |
| 1966-85 | 2.9 | 3.0 | 5.3 | 2.2 | 4.8 | 2.9 |

[a] Based on value added at 1982 factor cost.

[b] GNP excluding services that do not contribute directly to material output; based on value added in 1982 established prices.

[c] See *Narodnoye khozyaystvo SSSR v 1987 g.* (Moscow: Finansy i statistika, 1988), p. 7; and A.L. Vaynshteyn, *Narodnyy dokhod Rossii i SSSR* (Moscow: Nauka, 1969), p. 110.

[d] See Grigoriy Khanin, "Ekonomicheskiy rost: al'ternativnaya otsenka," *Kommunist* (No. 17, 1988): p. 85; and Vasiliy Selyunin and Khanin, "Lukavaya tsifra," *Novyy mir* (No. 2, 1987): pp. 194-195.

[e] See *SSSR v tsifrakh v 1988 godu* (Moscow: Finansy i statistika, 1989), p. 9; and A. G. Aganbegyan, "Programma korennoy perestroyki," *Ekonomika i organizatsiya promyshlennogo proizvodstva* (No. 11, 1987): pp. 6-7.

[f] See Abel Aganbegyan, *The Economic Challenge of Perestroika* (Bloomington, Ind.: Indiana University Press, 1988), p. 2 (graph).

do not contribute directly to material output.[96] The growth of both national income produced and national income used consistently exceeds GNP growth (see table 14), largely because of disguised inflation arising from Soviet procedures for establishing comparable prices for new products.[97]

The growing stream of Soviet criticism of official statistics noted above has yielded some unofficial calculations of NMP growth that are well below officially reported rates. In pioneering studies published in the late 1960s, average growth rates of national income produced were estimated at 6.5 to 7 percent per year between 1950 and about 1965—compared with our estimate of about 6 percent and an official rate of 9 percent.[98] More recently, the most comprehensive estimates are Selyunin and Khanin's

[96] Although NMP excludes the value added of nonmaterial services, it does include the value of material inputs used in their production.

[97] The value of national income produced in current prices exceeds that of national income used by the sum of losses of output produced but not distributed to final purchasers and net gains or losses of foreign exchange (converted to domestic rubles). See Treml and Kostinsky, *Domestic Value of Soviet Foreign Trade*, pp. 7-11. Growth rates of these two national income measures in comparable prices also differ, apparently because of inconsistencies in the procedures used to convert current prices to comparable prices. See Thomas A. Wolf, "Foreign Trade and National Income Statistics in the Soviet Union: A Comment," *Soviet Studies* (January 1987): pp. 122-128, and "A Further Note on Foreign Trade and National Income Statistics in the Soviet Union," *Soviet Studies* (April 1988): pp. 320-325.

[98] Soviet estimates by Boris Mikhalevskiy and Yuriy Sokolov are discussed in Frederick G. Denton, "A Recent Soviet Study of Economic Growth 1951-63," *Soviet Studies* (April 1968): pp. 501-509. A major Soviet study published after Denton's article is A.L. Vaynshteyn, *Narodnyy dokhod Rossii i SSSR* (The National Income of Russia and the USSR) (Moscow: Nauka, 1969).

for national income produced. In addition, Abel Aganbegyan, a prominent economic adviser to Gorbachev, has offered alternative estimates of the growth of national income used.

These unofficial Soviet growth rates for NMP are consistently closer to our estimates than to official Soviet statistics (table 14). It is not surprising that Selyunin and Khanin's figures are lower than ours because they appear to be based on quantity data to a greater extent.[99] The derivation of Aganbegyan's figures is unclear, except that he says they reflect "more realistic" price deflators than official statistics do.[100]

***Results of Sensitivity Tests.*** As mentioned earlier, our confidence in estimates of the growth of total GNP depends on both the reliability of growth estimates for the individual sectors of origin and the accuracy of the base-year weights of these sectors. Potential biases in sectoral growth rates have been assessed by James Noren, who found little net impact on total GNP growth.[101] Following his approach—but varying the specific assumptions somewhat—we can identify selected branches of industry and services as the principal sources of bias in growth estimates:

- Some understatement of growth—by up to 1 percentage point per year—in industrial branches where samples are dominated by quantity data—primarily chemicals, construction materials, and metals.

- An overstatement of machinery growth—where the sample includes a large share of Soviet value data—by 1 to 1.5 percentage points per year.

- A downward bias of 1 to 3 percentage points per year in the growth of housing, which is based on living space.

- Downward biases of 1 to 2 percentage points per year in the growth of those consumer and government services for which estimates are based on labor inputs.

The impact of these biases on total GNP growth is evaluated roughly by first adjusting estimates of average annual growth by sector of origin in 1951-87 to allow for the degrees of understatement or overstatement (in percentage points) shown in table 15. The adjusted estimates of growth for each sector are then weighted by the sector's share of GNP at factor cost, and adjusted growth rates of total GNP are calculated.[102] For purposes of this calculation, rates of sectoral growth that are not believed to be biased in any particular direction—even though some error is likely—are not adjusted. The resulting impact on total GNP growth turns out to be no more than a few tenths of a percentage point per year.

Estimates of base-year weights by sector of origin also are subject to error, but the likely impact on total GNP growth is minor. Alternative rates of return on capital and land (as in table 13) would affect GNP growth by no more than one or two tenths of a percentage point per year. The effects of another potential source of error—underestimation of the weights of private agriculture and services—cannot be evaluated, however, without more information on the growth of these activities than is presently available.

### Avenues For Improvements in Estimates

Research is under way—inside and outside the CIA—that could help us refine our estimates of Soviet GNP.

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[99] Selyunin and Khanin's methods of estimating national income growth are discussed in Khanin, "Puti sovershentvovaniya informatsionnogo obespecheniya," pp. 63-64; and summarized in Ericson, "The Soviet Statistical Debate," p. 29.

[100] *The Economic Challenge of* Perestroika (Bloomington, Ind.: Indiana University Press, 1988), p. 2.

[101] See "The New Look at Soviet Statistics: Implications for CIA Measures of the USSR's Economic Growth," in CIA Conference Report, *The Impact of Gorbachev's Policies on Soviet Economic Statistics* (SOV 88-10049, July 1988), pp. 69-81. Noren's findings are also discussed in CIA, *Revisiting Soviet Economic Performance Under* Glasnost: *Implications for CIA Estimates* (SOV 88-10068, September 1988), pp. 16-18.

[102] Our calculation of the minimum (or maximum) degree of bias (in percentage points) in total GNP growth is based on the minimum (or maximum) degree of bias regardless of sign in the growth of each sector. For example, a minimum bias of +1 percentage point per year in the growth of machinery is combined with a minimum bias of −1 percentage point, rather than −3 percentage points, in the growth of housing. If the minimum (or maximum) degrees of sectoral bias including signs were used in the calculation, the range of bias in estimates of total GNP growth would widen, but its midpoint would remain close to zero.

## Table 15
## USSR: Sensitivity Tests of Potential Bias in Estimates of GNP Growth

*Percent*

|  | Weight[a] | Growth Estimate 1951-87[b] | Assessment of Bias |  |
|---|---|---|---|---|
|  |  |  | Minimum *(Percentage Points)* | Maximum |
| **Total GNP** | **100.0** | **3.8** | **−0.1** | **−0.3** |
| **Industry** | **32.4** | **5.5** | **+0.2** | **+0.3** |
| Ferrous metals | 1.9 | 5.2 | −0.5 | −1.0 |
| Nonferrous metals | 1.3 | 6.0 | −0.5 | −1.0 |
| Fuel | 3.1 | 5.5 | OK | OK |
| Electric power | 2.3 | 8.1 | OK | OK |
| Machinery | 11.4 | 5.6 | +0.8 | +1.5 |
| Chemicals | 2.4 | 7.8 | −0.3 | −0.9 |
| Wood, pulp, and paper | 1.9 | 3.2 | −0.2 | −0.5 |
| Construction materials | 1.9 | 7.0 | −0.3 | −0.9 |
| Light industry | 2.2 | 4.3 | +0.1 | +0.4 |
| Food industry | 2.6 | 5.1 | −0.1 | −0.2 |
| Other industry | 1.3 | 5.5 | NA | NA |
| **Construction** | **7.8** | **5.1** | **OK** | **OK** |
| **Agriculture** | **20.6** | **1.7** | **OK** | **OK** |
| **Transportation** | **9.5** | **7.3** | **OK** | **OK** |
| **Communications** | **0.9** | **6.6** | **OK** | **OK** |
| **Trade** | **6.5** | **5.4** | **OK** | **OK** |
| **Services** | **20.1** | **3.3** | **−0.7** | **−1.7** |
| Housing | 5.5 | 3.1 | −1.0 | −3.0 |
| Utilities | 1.3 | 6.0 | −1.0 | −3.0 |
| Repair and personal care | 1.6 | 5.1 | +0.5 | +1.0 |
| Recreation | 1.0 | 4.6 | −0.5 | −1.0 |
| Education | 3.9 | 3.0 | −1.0 | −2.0 |
| Health | 2.1 | 3.1 | −1.0 | −2.0 |
| Science | 2.2 | 6.2 | OK | OK |
| Credit and insurance | 0.3 | 2.0 | −1.0 | −2.0 |
| Government administration | 2.2 | 1.2 | −0.5 | −1.0 |
| **Military personnel** | **1.9** | **0.8** | **OK** | **OK** |
| **Other branches** | **0.3** | **3.8** | **NA** | **NA** |

[a] Share of 1982 GNP.
[b] Average annual.

## Basis for Assessments of Minimum and Maximum Bias in Table 15[a]

**Total GNP:** weighted average of biases in component sectors shown.

**Total industry:** weighted average of biases in component sectors shown.

**Ferrous metals, nonferrous metals:** maximum bias assumed to be −1 percentage point, following Noren. Minimum taken as half of maximum.

**Fuels, electric power:** bias assumed negligible, on basis of table 8 (above).

**Machinery:** weighted average of biases in component sectors, as follows:

Automobiles, transportation machinery, military machinery: bias assumed negligible, following Noren.

Other sectors with samples based on quantity data: minimum bias assumed to be −1 percentage point, maximum −3 percentage points. Midpoint matches Noren's assumption (−2 percentage points) for miscellaneous industrial sectors with samples of this kind.

Sectors with samples based on value data: maximum bias taken as difference between Treml and CIA estimates of average annual growth during 1966-86. Minimum assumed to be half of maximum.

**Chemicals:** weighted average of biases in component sectors, as follows:

Basic chemicals, organic synthetic products, paints and lacquers: bias assumed negligible, following Noren.

Other sectors with samples based on quantity data: minimum and maximum biases assumed to be −1 and −3 percentage points, respectively, as for machinery sectors with samples of this kind.

Mineral chemicals (sample based on value data): maximum bias assumed to be +1 percentage point, following Noren. Minimum taken as half of maximum.

**Wood, pulp, and paper:** weighted average of biases in component sectors, as follows:

Logging, wood chemicals: bias assumed negligible, following Noren.

Other sectors with samples based on quantity data: minimum and maximum biases assumed to be −1 and −3 percentage points, respectively, as for machinery sectors with samples of this kind.

Furniture (sample based on value data): minimum bias assumed to be +1 percentage point, maximum +3 percentage points. Midpoint matches Noren's assumption (+2 percentage points) for miscellaneous industrial sectors with samples of this kind.

**Construction materials:** weighted average of biases in component sectors, as follows:

Cement, concrete, roofing materials, other construction materials: bias assumed negligible, following Noren.

Other sectors with samples based on quantity data: minimum and maximum biases assumed to be −1 and −3 percentage points, respectively, as for machinery sectors with samples of this kind.

There are no construction materials sectors with samples based on value data.

**Light industry:** weighted average of biases in component sectors, as follows:

Fabrics (cotton, silk, wool, linen): bias assumed negligible, following Noren.

Other sectors with samples based on quantity data: minimum and maximum biases assumed to be −1 and −3 percentage points, respectively, as for machinery sectors with samples of this kind.

Sewn goods (sample based on value data): minimum and maximum biases assumed to be +1 and +3 percentage points, respectively, as for furniture.

**Food industry:** weighted average of biases in component sectors, as follows:

Confectionary products: minimum and maximum biases assumed to be −1 and −3 percentage points, respectively. Midpoint matches Noren's assumption (−2 percentage points) for this sector.

Other sectors with samples based on quantity data: bias assumed negligible, following Noren.

There are no food industry sectors with samples based on value data.

(continued)

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[a] Except for minor updates and revisions, these assessments are based on James Noren, "The New Look at Soviet Statistics: Implications for CIA Measures of the USSR's Economic Growth," in CIA Conference Report, *The Impact of Gorbachev's Policies on Soviet Economic Statistics* (SOV 88-10049, July 1988), pp. 69-81.

***Basis for Assessments of Minimum and Maximum Bias in Table 15 (continued)***

***Construction, agriculture, transportation, communications, trade:** bias assumed negligible, following Noren.*

***Total services:** weighted average of biases in component sectors shown.*

***Housing:** maximum bias assumed to be −3 percentage points, on basis of table 10 (above). Minimum assumed to be −1 percentage point—slightly less than lower end of range suggested by table 10 because we consider alternative estimates for this sector especially likely to be overstated.*

***Utilities:** minimum and maximum biases assumed to be −1 and −3 percentage points, respectively, as for industrial sectors with samples based on quantity data.*

***Repair and personal care:** minimum and maximum biases assumed to be +0.5 and +1 percentage point, respectively.*

***Recreation:** minimum and maximum biases assumed to be −0.5 and −1 percentage point, respectively.*

***Education, health:** minimum and maximum biases assumed to be −1 and −2 percentage points, respectively, on basis of table 10 (above).*

***Science:** bias assumed negligible.*

***Credit and insurance:** minimum and maximum biases assumed to be −1 and −2 percentage points, respectively.*

***Government administration:** minimum and maximum biases assumed to be −0.5 and −1 percentage point, respectively, on basis of table 10 (above).*

***Military personnel:** bias assumed negligible, following Noren.*

The main focus of CIA research is on the estimation of growth, especially for key GNP components. Work is currently under way on:

- Updating our sample of industrial products, particularly the machinery sample.
- Evaluating the results of internal and external research on the impact of disguised inflation on estimates of the growth of machinery investment and output.
- Studying potential methods of incorporating productivity gains in our estimates of the growth of services.
- Developing better estimates of the impact of foreign trade on overall Soviet economic growth.[103]

Outside research could also contribute to better estimates of base-year GNP. The work of Grossman and Treml on the second economy is providing important information about the scope of private activity in the late 1970s, although data for estimating the growth of such activity remain inadequate. On another front, Liefert's research on returns on land includes information that should be useful in our own efforts to estimate such returns.

### *Glasnost, Perestroyka,* and Soviet Statistics

Gorbachev's policies of *glasnost* and *perestroyka* are beginning to affect both the statistical system in the USSR and the operation of the Soviet economy more generally. Because the State Committee for Statistics (*Goskomstat*) obtains much of its information from enterprise reporting on plan fulfillment, new economic incentives for workers and managers can influence the basic data. Over the next few years, systemic changes are likely to affect the comparability of measures of economic performance in the USSR—obtained either from our GNP estimates or from official Soviet statistics—with past figures.

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[103] For the United States, the Department of Commerce estimates the growth of the volume of goods and services over which the country has "command" as a result of its current production, and we hope to develop similar estimates for the USSR. The growth of command differs from the growth of the usual, production-based measure of GNP when the relationship between export prices and import prices (the country's "terms of trade") changes. See Edward F. Denison, "International Transactions in Measures of the Nation's Production," *Survey of Current Business* (May 1981): pp. 17-28.

Some additional economic information is being published, including new kinds of data bearing on current policies (see inset). On the other hand, some traditional kinds of data—especially on production in physical units—may stop appearing as their importance for economic planning diminishes. Substantial changes in the kinds of Soviet data available could require modifications in some of our procedures for estimating GNP. Without more information on how the new

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### *Changes in the Soviet Statistical System*

Glasnost *is prompting the release of some additional economic statistics, including both the reappearance of data previously withheld and the publication of new kinds of data bearing on current economic policies.*[a] *For example, data on grain and alcohol production have been restored to official statistical yearbooks. Moreover, special statistical compendia on subjects such as industry, agriculture, and labor—which have not been issued since the early 1970s—began to be published in late 1988.* Goskomstat *also has begun to issue press releases on a wide range of topics, often with policy implications, including the progress of the modernization drive, the health of the population, and current economic performance.*

*Many of the data appearing as a result of* glasnost *are of kinds seldom published, and perhaps not collected, in the past. New data on services, for instance, are being used to illustrate the effects of policies to encourage individual and cooperative activities in that sector. Some additional value data in current prices also are beginning to appear as greater emphasis is placed on financial indicators of enterprise performance, like profits and costs.*

*Despite* glasnost, *far fewer economic statistics are available for the USSR than for Western countries. In fact, the amount of information included in the most recent official statistical yearbooks probably remains below that released in the early to mid-1970s, although it has increased in the last few years. Data reflecting poorly on the USSR, moreover, are still suppressed from time to time—as at the beginning of 1987, when industrial performance suffered a variety of setbacks and a number of the usual statistics on production were not released.*

*The application of* perestroyka *to the Soviet statistical system is creating pressure on* Goskomstat *to reexamine the kinds of data it collects and the measures of economic performance it derives from those data.*[b] *Increased emphasis is to be placed on gauging the effects of economic policies and on making related indicators consistent with each other. Traditional gross output statistics—which encourage the wasteful use of energy and raw materials—are to be deemphasized. Instead, the focus is to turn to measures of final uses of output and to income measures in key sectors of origin. The distinction between final and intermediate uses of output is to be refined, and estimates of the linkages between production and use are to be improved. In addition, economic comparisons of the USSR with other countries are to be expanded, and estimates conforming to such Western concepts as GNP are to be developed for use in these comparisons.*

[a] *For a discussion of recent changes in the publication of data, see Rose Ann McHenry, "Changes in the Availability of Economic Data Under Gorbachev," in CIA Conference Report,* The Impact of Gorbachev's Policies on Soviet Economic Statistics *(SOV 88-10049, July 1988). For background on earlier publication policies, see Michael Kaser, "The Publication of Soviet Statistics," in Treml and Hardt, eds.,* Soviet Economic Statistics, *chapter 3.*

[b] *For further discussion of the restructuring of the Soviet statistical system, see Vladimir Treml, "*Perestroyka *and Soviet Statistics," in CIA Conference Report,* The Impact of Gorbachev's Policies on Soviet Economic Statistics.

data are likely to differ from the old, it is impossible to predict the impact of such changes on the quality of our GNP estimates.

Another recent change in the statistical system is a reinvigoration of efforts against falsification in reporting data. For example, there were 15,000 prosecutions for "distortions of statistics" in 1987.[104] If successful, this anticorruption campaign is likely to reduce the extent of exaggeration in production data and thus lower our estimates of GNP growth over the next few years. On the other hand, pressure to meet targets for traditional indicators like gross output—combined with simultaneous requirements to implement sweeping changes in the economic system—may increase the temptation for enterprise managers to overstate production. Increasing overstatement could boost growth artificially, if only for a short time.

Besides its potential effects on the statistical system, *perestroyka* is bringing more general changes in the Soviet economy. Some of these changes are likely to affect our ability to measure economic performance during the next few years:

- Official encouragement of individual and cooperative economic activities appears to be spurring the growth of a number of consumer-oriented sectors. To the extent that this growth reflects a shift from illegal, unreported activities to legal, reported ones, consumption growth will be exaggerated for a time.
- Recently strengthened incentives for innovation are reported to be achieving some results. Because innovation brings new products, whose pricing is a primary source of disguised inflation, the extent of overstatement in estimates of GNP growth—and especially in official Soviet statistics—could increase. On the other hand, the extent of overstatement could decrease if the rate of genuine rather than token innovation rises.
- The authority to set prices is to be decentralized gradually as part of the transition to self-financing. If actual inflation accelerates as administrative controls on prices weaken, the impact of disguised inflation on our estimates of GNP growth, and on official Soviet statistics, probably will increase temporarily.

The effects of all of these changes are likely to diminish as the economy adjusts and disappear after a few years. During the adjustment period, however, the interpretation of Soviet economic growth will require special caution.

[104] *Izvestiya* (27 April 1988): p. 1.

# Appendix A

## Trends in Soviet GNP, 1950-87

This appendix presents detailed tables of the CIA's latest estimates of trends in real Soviet GNP during the 1950-87 period. Unless otherwise specified, all estimates reflect 1982 factor cost weights.

Tables appear in the following order:

A-1. USSR: GNP by Sector of Origin at 1982 Factor Cost

A-2. USSR: Average Annual Growth of GNP by Sector of Origin

A-3. USSR: Annual Growth of GNP by Sector of Origin

A-4. USSR: Indexes of GNP by Sector of Origin

A-5. USSR: Shares of GNP by Sector of Origin

A-6. USSR: GNP by End Use at 1982 Factor Cost

A-7. USSR: Average Annual Growth of GNP by End Use

A-8. USSR: Annual Growth of GNP by End Use

A-9. USSR: Indexes of GNP by End Use

A-10. USSR: Shares of GNP by End Use

A-11. USSR: Consumption in 1982 Established Prices

A-12. USSR: Average Annual Growth of Consumption in 1982 Established Prices

A-13. USSR: Consumption Per Capita in 1982 Established Prices

A-14. USSR: Average Annual Growth of Consumption Per Capita in 1982 Established Prices

**Table A-1**

*Billion 1982 rubles*

## USSR: GNP by Sector of Origin at 1982 Factor Cost

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 32.9 | 37.0 | 40.0 | 43.3 | 47.3 | 52.2 | 55.8 | 59.5 | 64.2 | 69.9 |
| Ferrous metals | 2.1 | 2.4 | 2.8 | 3.1 | 3.3 | 3.7 | 3.9 | 4.2 | 4.5 | 4.8 |
| Nonferrous metals | 1.1 | 1.2 | 1.4 | 1.6 | 1.7 | 2.0 | 2.1 | 2.2 | 2.3 | 2.5 |
| Fuel | 3.0 | 3.2 | 3.5 | 3.7 | 4.1 | 4.7 | 5.1 | 5.8 | 6.2 | 6.7 |
| Electric power | 1.0 | 1.2 | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | 2.3 | 2.6 | 2.9 |
| Machinery | 11.4 | 12.6 | 13.6 | 14.5 | 15.6 | 17.3 | 18.1 | 18.7 | 19.6 | 21.2 |
| Chemicals | 1.2 | 1.3 | 1.4 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.7 | 3.0 |
| Wood, pulp, and paper | 4.6 | 5.2 | 5.4 | 5.6 | 6.2 | 6.5 | 6.7 | 7.2 | 7.9 | 8.6 |
| Construction materials | 1.2 | 1.4 | 1.6 | 1.9 | 2.1 | 2.5 | 2.8 | 3.3 | 4.0 | 4.6 |
| Light industry | 3.3 | 3.9 | 4.1 | 4.5 | 5.0 | 5.3 | 5.5 | 5.8 | 6.2 | 6.7 |
| Food industry | 2.7 | 3.1 | 3.4 | 3.8 | 4.0 | 4.3 | 4.9 | 5.2 | 5.6 | 6.2 |
| Other industry | 1.3 | 1.5 | 1.6 | 1.7 | 1.9 | 2.1 | 2.2 | 2.4 | 2.5 | 2.8 |
| Construction | 9.1 | 10.4 | 11.4 | 12.5 | 13.9 | 15.6 | 16.9 | 18.7 | 21.1 | 23.7 |
| Agriculture | 75.9 | 66.5 | 71.0 | 73.7 | 75.6 | 84.6 | 99.0 | 95.5 | 103.8 | 105.0 |
| Transportation | 5.0 | 5.6 | 6.1 | 6.8 | 7.5 | 9.0 | 10.1 | 11.6 | 12.9 | 14.3 |
| Freight | 3.5 | 3.9 | 4.3 | 4.7 | 5.2 | 6.4 | 7.4 | 8.4 | 9.4 | 10.6 |
| Passenger | 1.5 | 1.7 | 1.8 | 2.0 | 2.3 | 2.6 | 2.8 | 3.1 | 3.5 | 3.8 |
| Communications | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.3 |
| Trade | 6.6 | 7.2 | 8.0 | 8.9 | 9.9 | 10.9 | 11.8 | 12.8 | 14.0 | 15.0 |
| Services | 44.5 | 45.8 | 47.2 | 48.1 | 49.7 | 50.6 | 52.0 | 53.4 | 56.0 | 58.3 |
| Housing | 13.3 | 13.7 | 14.0 | 14.4 | 14.8 | 15.2 | 15.7 | 16.4 | 17.2 | 18.2 |
| Utilities | 1.2 | 1.3 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 2.0 | 2.2 |
| Repair and personal care | 2.1 | 2.2 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.6 | 2.7 | 3.1 |
| Recreation | 1.3 | 1.5 | 1.7 | 1.7 | 2.1 | 2.5 | 2.8 | 3.0 | 3.3 | 3.5 |
| Education | 9.2 | 9.5 | 9.9 | 10.1 | 10.6 | 11.0 | 11.1 | 11.4 | 11.6 | 11.9 |
| Health | 4.7 | 4.9 | 5.1 | 5.3 | 5.7 | 6.0 | 6.2 | 6.5 | 6.8 | 7.2 |
| Science | 1.7 | 1.9 | 2.0 | 2.1 | 2.2 | 2.4 | 2.7 | 3.0 | 3.3 | 3.7 |
| Credit and insurance | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 |
| Government administration | 10.0 | 10.0 | 10.1 | 9.8 | 9.6 | 8.4 | 8.3 | 7.9 | 8.0 | 7.8 |
| General agricultural programs | 1.0 | 1.1 | 1.2 | 1.2 | 1.7 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 |
| Forestry | 0.9 | 0.9 | 1.0 | 0.9 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 |
| State administration | 4.6 | 4.5 | 4.4 | 4.3 | 3.8 | 3.4 | 3.2 | 3.0 | 3.0 | 2.9 |
| Culture | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Municipal services | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Civilian police | 2.6 | 2.6 | 2.6 | 2.5 | 2.2 | 1.9 | 1.9 | 1.8 | 1.7 | 1.7 |
| Military personnel | 9.3 | 11.6 | 12.4 | 11.4 | 10.6 | 9.9 | 9.7 | 9.1 | 8.3 | 7.8 |
| Other branches | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.8 |
| Gross national product | 184.3 | 185.3 | 197.4 | 206.0 | 216.0 | 234.4 | 257.0 | 262.4 | 282.3 | 296.1 |
| GNP in established prices | 179.0 | 185.1 | 197.7 | 208.2 | 220.6 | 239.9 | 262.4 | 270.7 | 291.8 | 308.4 |

## Table A-1 (continued)
## USSR: GNP by Sector of Origin at 1982 Factor Cost

*Billion 1982 rubles*

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 75.1 | 80.5 | 86.6 | 90.9 | 96.9 | 103.1 | 108.6 | 116.8 | 123.9 | 130.5 |
| Ferrous metals | 5.3 | 5.8 | 6.3 | 6.6 | 7.1 | 7.6 | 8.1 | 8.6 | 9.0 | 9.3 |
| Nonferrous metals | 2.7 | 2.9 | 3.2 | 3.5 | 3.7 | 4.0 | 4.4 | 4.8 | 5.1 | 5.4 |
| Fuel | 7.2 | 7.6 | 8.1 | 8.8 | 9.4 | 9.9 | 10.6 | 11.3 | 11.7 | 12.3 |
| Electric power | 3.2 | 3.6 | 4.1 | 4.5 | 5.0 | 5.5 | 6.0 | 6.4 | 7.0 | 7.5 |
| Machinery | 23.3 | 25.5 | 28.3 | 29.2 | 31.2 | 32.8 | 34.1 | 37.2 | 39.9 | 42.6 |
| Chemicals | 3.3 | 3.6 | 3.9 | 4.4 | 5.0 | 5.7 | 6.2 | 6.7 | 7.2 | 7.6 |
| Wood, pulp, and paper | 8.6 | 8.6 | 8.7 | 9.1 | 9.5 | 9.7 | 9.7 | 10.2 | 10.5 | 10.6 |
| Construction materials | 5.1 | 5.6 | 5.8 | 6.0 | 6.3 | 6.8 | 7.2 | 7.7 | 8.1 | 8.2 |
| Light industry | 7.0 | 7.3 | 7.5 | 7.6 | 7.9 | 8.1 | 8.6 | 9.3 | 9.9 | 10.5 |
| Food industry | 6.4 | 6.9 | 7.3 | 7.6 | 8.1 | 9.0 | 9.4 | 10.1 | 10.6 | 11.3 |
| Other industry | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 4.1 | 4.3 | 4.6 | 4.9 | 5.2 |
| Construction | 25.3 | 26.6 | 27.7 | 28.8 | 30.3 | 32.1 | 33.3 | 35.8 | 37.5 | 38.9 |
| Agriculture | 102.7 | 109.0 | 104.4 | 85.9 | 113.7 | 118.1 | 123.1 | 122.2 | 130.4 | 122.1 |
| Transportation | 15.9 | 17.2 | 18.6 | 20.4 | 22.5 | 25.5 | 27.3 | 29.8 | 32.0 | 33.6 |
| Freight | 11.7 | 12.5 | 13.4 | 14.6 | 16.3 | 18.7 | 19.7 | 21.5 | 22.8 | 23.7 |
| Passenger | 4.2 | 4.6 | 5.2 | 5.8 | 6.2 | 6.8 | 7.6 | 8.3 | 9.2 | 9.9 |
| Communications | 1.4 | 1.5 | 1.6 | 1.7 | 1.9 | 2.0 | 2.3 | 2.5 | 2.7 | 2.9 |
| Trade | 16.0 | 16.7 | 17.7 | 18.4 | 19.1 | 20.3 | 21.8 | 23.5 | 25.2 | 26.6 |
| Services | 60.7 | 63.1 | 66.3 | 69.0 | 72.6 | 76.2 | 79.4 | 82.8 | 86.6 | 90.0 |
| Housing | 19.2 | 20.2 | 21.0 | 21.9 | 22.6 | 23.3 | 24.0 | 24.8 | 25.6 | 26.3 |
| Utilities | 2.5 | 2.7 | 2.9 | 3.1 | 3.4 | 3.6 | 3.8 | 4.1 | 4.3 | 4.5 |
| Repair and personal care | 3.2 | 3.4 | 3.5 | 3.7 | 4.0 | 4.3 | 4.6 | 5.0 | 5.3 | 5.7 |
| Recreation | 3.6 | 3.8 | 4.0 | 4.0 | 4.2 | 4.5 | 4.5 | 4.8 | 5.0 | 5.1 |
| Education | 12.2 | 12.8 | 13.7 | 14.4 | 15.4 | 16.3 | 17.1 | 17.7 | 18.4 | 19.0 |
| Health | 7.5 | 7.8 | 8.1 | 8.3 | 8.7 | 9.0 | 9.4 | 9.6 | 10.1 | 10.5 |
| Science | 4.2 | 4.7 | 5.2 | 5.6 | 6.1 | 6.4 | 6.9 | 7.2 | 7.6 | 8.2 |
| Credit and insurance | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Government administration | 7.5 | 6.9 | 7.1 | 7.1 | 7.4 | 7.8 | 8.2 | 8.8 | 9.3 | 9.7 |
| General agricultural programs | 1.4 | 0.9 | 0.9 | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 1.1 | 1.1 |
| Forestry | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| State administration | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 |
| Culture | 0.6 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 |
| Municipal services | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 |
| Civilian police | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 |
| Military personnel | 7.8 | 7.6 | 7.9 | 8.2 | 8.4 | 8.6 | 8.8 | 9.2 | 9.6 | 9.8 |
| Other branches | 0.8 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 |
| Gross national product | 305.7 | 323.1 | 331.8 | 324.2 | 366.4 | 387.0 | 405.7 | 423.8 | 449.0 | 455.6 |
| GNP in established prices | 320.3 | 338.3 | 349.7 | 347.3 | 386.8 | 409.6 | 430.7 | 453.3 | 480.4 | 492.3 |

## Table A-1 (continued)
## USSR: GNP by Sector of Origin at 1982 Factor Cost

*Billion 1982 rubles*

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 138.0 | 144.2 | 150.6 | 160.6 | 171.7 | 181.4 | 187.4 | 193.0 | 197.2 | 200.7 |
| Ferrous metals | 9.8 | 10.3 | 10.6 | 11.1 | 11.4 | 12.0 | 12.4 | 12.5 | 12.8 | 12.7 |
| Nonferrous metals | 5.8 | 6.1 | 6.4 | 6.8 | 7.2 | 7.6 | 7.7 | 7.8 | 7.9 | 8.1 |
| Fuel | 12.9 | 13.5 | 14.2 | 14.9 | 15.7 | 16.6 | 17.3 | 18.0 | 18.6 | 19.0 |
| Electric power | 8.1 | 8.8 | 9.4 | 10.0 | 10.7 | 11.4 | 12.2 | 12.6 | 13.2 | 13.6 |
| Machinery | 44.3 | 46.0 | 48.3 | 53.7 | 59.1 | 62.5 | 65.3 | 67.4 | 69.0 | 71.6 |
| Chemicals | 8.5 | 9.0 | 9.5 | 10.4 | 11.5 | 12.6 | 13.2 | 13.8 | 14.2 | 14.0 |
| Wood, pulp, and paper | 11.1 | 11.4 | 11.6 | 11.9 | 12.1 | 12.6 | 12.5 | 12.6 | 12.5 | 12.0 |
| Construction materials | 9.1 | 9.7 | 10.1 | 10.7 | 11.2 | 11.8 | 12.0 | 12.2 | 12.5 | 12.3 |
| Light industry | 11.0 | 11.5 | 11.5 | 11.9 | 12.2 | 12.5 | 12.9 | 13.2 | 13.6 | 13.8 |
| Food industry | 12.0 | 12.3 | 12.8 | 12.9 | 13.9 | 14.7 | 14.6 | 15.2 | 15.2 | 15.6 |
| Other industry | 5.5 | 5.7 | 6.0 | 6.4 | 6.8 | 7.2 | 7.4 | 7.7 | 7.8 | 8.0 |
| Construction | 42.0 | 44.5 | 46.6 | 48.3 | 49.8 | 51.6 | 52.0 | 52.2 | 52.5 | 51.5 |
| Agriculture | 139.5 | 136.3 | 124.2 | 147.7 | 142.1 | 124.4 | 138.7 | 142.0 | 147.0 | 134.8 |
| Transportation | 35.9 | 38.5 | 40.5 | 43.5 | 46.5 | 49.3 | 51.6 | 52.3 | 54.7 | 56.3 |
| Freight | 25.3 | 27.1 | 28.3 | 30.6 | 32.6 | 34.3 | 35.7 | 37.1 | 38.9 | 39.7 |
| Passenger | 10.6 | 11.4 | 12.2 | 12.9 | 13.9 | 15.0 | 15.8 | 15.2 | 15.8 | 16.6 |
| Communications | 3.1 | 3.3 | 3.5 | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | 4.8 | 5.1 |
| Trade | 28.5 | 29.8 | 30.9 | 32.4 | 34.2 | 35.9 | 37.3 | 38.4 | 38.9 | 40.0 |
| Services | 93.3 | 96.7 | 100.0 | 103.1 | 106.5 | 109.8 | 112.2 | 114.8 | 118.0 | 121.3 |
| Housing | 27.1 | 27.8 | 28.5 | 29.2 | 29.9 | 30.6 | 31.3 | 32.0 | 32.6 | 33.3 |
| Utilities | 4.8 | 5.0 | 5.2 | 5.4 | 5.8 | 6.1 | 6.4 | 6.7 | 7.1 | 7.4 |
| Repair and personal care | 6.0 | 6.3 | 6.7 | 7.0 | 7.4 | 7.8 | 8.1 | 8.4 | 8.9 | 9.3 |
| Recreation | 5.2 | 5.3 | 5.5 | 5.5 | 5.8 | 6.0 | 5.8 | 5.9 | 6.0 | 6.2 |
| Education | 19.6 | 20.1 | 20.6 | 20.9 | 21.4 | 21.8 | 22.2 | 22.6 | 23.2 | 23.7 |
| Health | 10.8 | 11.2 | 11.5 | 11.7 | 12.0 | 12.2 | 12.5 | 12.6 | 12.8 | 13.1 |
| Science | 8.8 | 9.4 | 10.1 | 10.7 | 11.2 | 11.8 | 11.9 | 12.2 | 12.6 | 13.2 |
| Credit and insurance | 1.1 | 1.2 | 1.3 | 1.3 | 1.4 | 1.5 | 1.6 | 1.6 | 1.7 | 1.8 |
| Government administration | 10.0 | 10.4 | 10.8 | 11.1 | 11.6 | 12.0 | 12.3 | 12.7 | 13.0 | 13.3 |
| General agricultural programs | 1.1 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.6 | 1.6 | 1.7 | 1.8 |
| Forestry | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| State administration | 3.9 | 4.0 | 4.1 | 4.3 | 4.4 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 |
| Culture | 1.2 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.6 | 1.7 | 1.8 | 1.8 |
| Municipal services | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 | 1.0 | 1.1 |
| Civilian police | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.6 | 2.7 | 2.8 | 2.8 | 2.9 |
| Military personnel | 10.1 | 10.5 | 10.7 | 10.8 | 10.9 | 11.1 | 11.2 | 11.2 | 11.4 | 11.6 |
| Other branches | 1.3 | 1.3 | 1.3 | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.6 |
| Gross national product | 491.6 | 505.1 | 508.3 | 551.7 | 567.2 | 569.1 | 596.4 | 610.2 | 626.2 | 623.0 |
| GNP in established prices | 528.9 | 545.8 | 553.4 | 595.1 | 616.2 | 625.7 | 652.5 | 669.2 | 685.9 | 686.7 |

## Table A-1 (continued)
## USSR: GNP by Sector of Origin at 1982 Factor Cost

*Billion 1982 rubles*

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Industry | 204.1 | 206.7 | 209.3 | 214.5 | 220.5 | 225.1 | 231.0 | 238.3 |
| Ferrous metals | 12.6 | 12.6 | 12.5 | 12.9 | 13.0 | 13.1 | 13.6 | 13.8 |
| Nonferrous metals | 8.2 | 8.2 | 8.3 | 8.5 | 8.8 | 9.0 | 9.3 | 9.5 |
| Fuel | 19.4 | 19.6 | 20.0 | 20.2 | 20.3 | 20.3 | 21.0 | 21.4 |
| Electric power | 14.2 | 14.5 | 14.8 | 15.3 | 16.0 | 16.5 | 17.1 | 17.8 |
| Machinery | 72.6 | 72.9 | 74.0 | 75.2 | 77.8 | 80.1 | 82.5 | 85.5 |
| Chemicals | 14.6 | 15.2 | 15.5 | 16.4 | 17.0 | 17.7 | 18.5 | 19.0 |
| Wood, pulp, and paper | 12.3 | 12.4 | 12.5 | 12.9 | 13.3 | 13.5 | 14.2 | 14.8 |
| Construction materials | 12.3 | 12.7 | 12.5 | 13.0 | 13.2 | 13.5 | 14.0 | 14.5 |
| Light industry | 14.1 | 14.3 | 14.2 | 14.4 | 14.8 | 15.2 | 15.4 | 15.7 |
| Food industry | 15.7 | 16.1 | 16.6 | 17.1 | 17.5 | 17.2 | 16.3 | 16.9 |
| Other industry | 8.1 | 8.2 | 8.3 | 8.5 | 8.8 | 8.9 | 9.2 | 9.5 |
| Construction | 51.4 | 51.5 | 50.6 | 52.2 | 53.1 | 54.3 | 56.4 | 57.8 |
| Agriculture | 125.5 | 122.5 | 133.4 | 141.3 | 138.4 | 133.1 | 146.8 | 140.9 |
| Transportation | 58.8 | 61.0 | 61.6 | 63.3 | 64.1 | 65.5 | 67.5 | 68.2 |
| Freight | 41.4 | 42.9 | 43.2 | 44.5 | 44.9 | 45.7 | 47.0 | 47.3 |
| Passenger | 17.4 | 18.1 | 18.4 | 18.8 | 19.3 | 19.8 | 20.5 | 21.0 |
| Communications | 5.3 | 5.5 | 5.7 | 5.9 | 6.1 | 6.4 | 6.8 | 7.2 |
| Trade | 40.9 | 41.7 | 41.9 | 43.0 | 44.2 | 44.7 | 44.9 | 45.9 |
| Services | 124.9 | 127.9 | 130.1 | 133.0 | 136.2 | 139.4 | 142.5 | 147.0 |
| Housing | 33.9 | 34.7 | 35.7 | 36.7 | 37.6 | 38.5 | 39.6 | 40.7 |
| Utilities | 7.7 | 8.1 | 8.5 | 8.8 | 9.3 | 9.8 | 10.3 | 10.7 |
| Repair and personal care | 9.8 | 10.2 | 10.5 | 10.9 | 11.4 | 11.9 | 12.3 | 13.2 |
| Recreation | 6.4 | 6.5 | 6.6 | 6.6 | 6.7 | 6.8 | 6.8 | 6.8 |
| Education | 24.4 | 24.7 | 25.0 | 25.3 | 25.7 | 26.2 | 26.8 | 27.6 |
| Health | 13.1 | 13.3 | 13.6 | 13.8 | 14.0 | 14.3 | 14.5 | 14.9 |
| Science | 13.9 | 14.3 | 14.0 | 14.3 | 14.7 | 15.0 | 15.2 | 15.7 |
| Credit and insurance | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 |
| Government administration | 13.8 | 14.2 | 14.4 | 14.5 | 14.8 | 14.9 | 15.1 | 15.4 |
| General agricultural programs | 1.9 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 |
| Forestry | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| State administration | 5.2 | 5.3 | 5.3 | 5.4 | 5.5 | 5.5 | 5.6 | 5.7 |
| Culture | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2 |
| Municipal services | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 |
| Civilian police | 3.0 | 3.0 | 3.1 | 3.1 | 3.2 | 3.2 | 3.3 | 3.3 |
| Military personnel | 12.0 | 12.1 | 12.3 | 12.5 | 12.5 | 12.5 | 12.6 | 12.6 |
| Other branches | 1.6 | 1.7 | 1.7 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 |
| Gross national product | 624.7 | 630.6 | 646.7 | 667.3 | 676.9 | 682.9 | 710.3 | 719.9 |
| GNP in established prices | 691.0 | 698.8 | 713.7 | 734.2 | 745.7 | 751.9 | 776.5 | 789.2 |

**Table A-2** *Percent*

**USSR: Average Annual Growth of GNP by Sector of Origin**

| | 1951-55 | 1956-60 | 1961-65 | 1966-70 | 1971-75 | 1976-80 | 1981-85 | 1986-87 |
|---|---|---|---|---|---|---|---|---|
| Industry | 9.7 | 7.5 | 6.5 | 6.0 | 5.6 | 2.4 | 2.0 | 2.9 |
| Ferrous metals | 11.3 | 7.7 | 7.4 | 5.3 | 4.0 | 1.0 | 0.8 | 2.4 |
| Nonferrous metals | 12.4 | 6.4 | 8.0 | 7.8 | 5.7 | 1.5 | 2.0 | 2.4 |
| Fuel | 9.8 | 8.9 | 6.7 | 5.3 | 5.2 | 3.1 | 0.9 | 2.7 |
| Electric power | 13.1 | 11.4 | 11.5 | 7.9 | 7.0 | 4.5 | 3.1 | 3.8 |
| Machinery | 8.7 | 6.1 | 7.1 | 6.2 | 7.2 | 3.0 | 2.0 | 3.3 |
| Chemicals | 11.0 | 10.4 | 11.7 | 8.3 | 8.3 | 3.0 | 3.8 | 3.7 |
| Wood, pulp, and paper | 7.3 | 5.6 | 2.5 | 2.8 | 2.5 | −0.4 | 1.9 | 4.5 |
| Construction materials | 16.2 | 15.2 | 5.6 | 6.1 | 5.3 | 0.9 | 1.8 | 3.7 |
| Light industry | 10.2 | 5.8 | 2.7 | 6.4 | 2.6 | 2.4 | 1.6 | 1.6 |
| Food industry | 9.8 | 8.4 | 7.0 | 5.9 | 4.1 | 1.4 | 1.8 | −0.7 |
| Other industry | 9.7 | 7.5 | 6.5 | 6.0 | 5.6 | 2.4 | 2.0 | 2.9 |
| Construction | 11.4 | 10.2 | 4.9 | 5.5 | 4.2 | −0.1 | 1.1 | 3.1 |
| Agriculture | 2.2 | 3.9 | 2.8 | 3.4 | −2.3 | 0.2 | 1.2 | 2.9 |
| Transportation | 12.7 | 11.9 | 10.0 | 7.1 | 6.5 | 3.6 | 2.2 | 2.1 |
| Freight | 13.1 | 12.7 | 9.9 | 6.2 | 6.3 | 3.8 | 2.0 | 1.7 |
| Passenger | 11.9 | 10.0 | 10.1 | 9.3 | 7.1 | 3.1 | 2.6 | 2.9 |
| Communications | 8.6 | 7.3 | 7.3 | 8.6 | 6.4 | 4.7 | 3.9 | 6.2 |
| Trade | 10.6 | 8.0 | 4.9 | 7.0 | 4.7 | 2.7 | 1.8 | 1.3 |
| Services | 2.6 | 3.7 | 4.6 | 4.1 | 3.3 | 2.6 | 2.2 | 2.7 |
| Housing | 2.7 | 4.8 | 3.9 | 3.0 | 2.5 | 2.1 | 2.6 | 2.8 |
| Utilities | 5.4 | 9.1 | 8.1 | 5.6 | 5.1 | 4.9 | 4.9 | 4.3 |
| Repair and personal care | 3.7 | 5.1 | 6.1 | 6.9 | 5.1 | 4.8 | 3.9 | 5.5 |
| Recreation | 14.5 | 7.3 | 4.5 | 2.9 | 3.1 | 1.2 | 1.2 | 0.2 |
| Education | 3.6 | 2.2 | 5.9 | 3.7 | 2.2 | 2.2 | 1.5 | 2.7 |
| Health | 5.0 | 4.4 | 3.8 | 3.6 | 2.6 | 1.4 | 1.7 | 2.2 |
| Science | 7.2 | 12.1 | 8.8 | 6.5 | 5.9 | 3.4 | 1.5 | 2.3 |
| Credit and insurance | −0.1 | −2.4 | 1.5 | 5.5 | 5.9 | 4.3 | 0.8 | −0.3 |
| Government administration | −3.4 | −2.4 | 0.9 | 5.1 | 3.7 | 2.9 | 1.5 | 1.6 |
| General agricultural programs | 5.5 | 1.7 | −8.3 | 4.8 | 4.8 | 5.5 | 3.4 | −1.3 |
| Forestry | −2.8 | −4.0 | 1.3 | 1.7 | 0.9 | −0.0 | −0.2 | −1.3 |
| State administration | −6.0 | −4.1 | 2.2 | 4.9 | 3.5 | 2.4 | 1.2 | 2.3 |
| Culture | 3.5 | 1.6 | 5.5 | 8.4 | 5.0 | 3.8 | 1.3 | 2.9 |
| Municipal services | 2.7 | 1.4 | 3.4 | 5.3 | 4.5 | 3.2 | 1.6 | 1.7 |
| Civilian police | −6.0 | −4.1 | 2.2 | 4.9 | 3.5 | 2.4 | 1.2 | 2.3 |
| Military personnel | 1.3 | −4.6 | 2.0 | 3.3 | 1.8 | 1.6 | 0.9 | 0.2 |
| Other branches | 4.9 | 5.5 | 4.8 | 4.9 | 3.0 | 1.9 | 1.8 | 2.7 |
| Gross national product | 4.9 | 5.5 | 4.8 | 4.9 | 3.0 | 1.9 | 1.8 | 2.7 |
| GNP in established prices | 6.0 | 5.9 | 5.0 | 5.2 | 3.4 | 2.0 | 1.7 | 2.4 |

## Table A-3
## USSR: Annual Growth of GNP by Sector of Origin

*Percent*

| | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|
| Industry | 12.6 | 8.1 | 8.2 | 9.4 | 10.3 | 6.9 | 6.5 | 7.9 | 8.9 |
| Ferrous metals | 13.8 | 13.9 | 10.1 | 9.5 | 9.4 | 7.2 | 6.1 | 7.2 | 8.2 |
| Nonferrous metals | 13.0 | 12.4 | 11.2 | 9.4 | 16.3 | 5.9 | 5.7 | 5.9 | 6.3 |
| Fuel | 9.4 | 7.4 | 7.3 | 10.8 | 14.2 | 9.4 | 11.9 | 8.5 | 7.8 |
| Electric power | 13.8 | 14.4 | 12.8 | 11.8 | 12.7 | 12.7 | 9.5 | 12.3 | 12.4 |
| Machinery | 10.2 | 7.7 | 7.0 | 7.6 | 10.9 | 4.7 | 3.1 | 5.1 | 8.2 |
| Chemicals | 8.1 | 8.4 | 10.3 | 15.0 | 13.5 | 13.0 | 10.1 | 10.4 | 8.5 |
| Wood, pulp, and paper | 13.7 | 3.7 | 3.7 | 10.2 | 5.3 | 3.7 | 7.0 | 9.0 | 9.1 |
| Construction materials | 16.8 | 14.2 | 15.7 | 15.5 | 18.8 | 11.7 | 17.9 | 18.8 | 15.7 |
| Light industry | 18.5 | 6.4 | 9.0 | 10.8 | 6.9 | 3.9 | 4.5 | 7.4 | 7.4 |
| Food industry | 15.6 | 8.9 | 11.2 | 6.2 | 7.3 | 14.0 | 6.4 | 7.8 | 9.7 |
| Other industry | 12.6 | 8.1 | 8.2 | 9.4 | 10.3 | 6.9 | 6.5 | 7.9 | 8.9 |
| Construction | 14.3 | 9.7 | 9.9 | 10.6 | 12.4 | 8.2 | 11.0 | 12.9 | 12.2 |
| Agriculture | −12.3 | 6.7 | 3.9 | 2.6 | 11.9 | 16.9 | −3.5 | 8.8 | 1.1 |
| Transportation | 12.0 | 9.9 | 10.7 | 11.3 | 20.0 | 12.0 | 14.4 | 11.2 | 11.4 |
| Freight | 12.0 | 9.8 | 10.3 | 11.3 | 22.5 | 14.4 | 14.7 | 11.6 | 12.2 |
| Passenger | 11.9 | 10.1 | 11.7 | 11.4 | 14.3 | 5.9 | 13.6 | 10.3 | 9.3 |
| Communications | 10.3 | 9.4 | 6.6 | 8.8 | 7.8 | 8.3 | 7.7 | 5.9 | 6.7 |
| Trade | 9.9 | 10.2 | 11.6 | 11.3 | 9.8 | 8.7 | 8.2 | 9.6 | 6.8 |
| Services | 3.0 | 3.0 | 1.8 | 3.3 | 1.9 | 2.7 | 2.8 | 4.8 | 4.2 |
| Housing | 2.5 | 2.6 | 2.5 | 2.7 | 3.0 | 3.3 | 4.2 | 5.1 | 5.8 |
| Utilities | 4.1 | 4.1 | 5.4 | 6.7 | 6.8 | 7.0 | 8.7 | 10.8 | 9.8 |
| Repair and personal care | 3.2 | 3.7 | 4.2 | 3.7 | 3.9 | 0.6 | 1.8 | 6.6 | 12.2 |
| Recreation | 15.6 | 12.8 | 4.2 | 17.9 | 23.1 | 11.2 | 7.9 | 10.1 | 3.8 |
| Education | 3.4 | 3.3 | 2.5 | 4.6 | 4.1 | 1.4 | 1.9 | 2.5 | 2.2 |
| Health | 4.1 | 3.9 | 3.6 | 6.9 | 6.3 | 2.8 | 4.4 | 5.4 | 4.6 |
| Science | 9.4 | 7.9 | 4.6 | 5.5 | 8.5 | 12.4 | 10.2 | 13.0 | 10.6 |
| Credit and insurance | −0.7 | −0.7 | 0.2 | 0.2 | 0.2 | −2.1 | −4.2 | −1.1 | −2.7 |
| Government administration | 0.4 | 0.3 | −2.6 | −2.2 | −12.2 | −1.8 | −4.4 | 0.7 | −2.4 |
| General agricultural programs | 9.7 | 8.9 | 5.4 | 40.1 | −26.0 | 4.3 | −2.6 | 7.0 | 3.6 |
| Forestry | 1.7 | 1.7 | −10.1 | −3.5 | −3.4 | −2.2 | −5.6 | −3.3 | −6.7 |
| State administration | −1.5 | −1.5 | −3.5 | −10.7 | −12.0 | −3.8 | −5.8 | −0.7 | −4.3 |
| Culture | 3.4 | 3.2 | 2.5 | 4.5 | 4.0 | 1.0 | 1.5 | 2.5 | 1.3 |
| Municipal services | 3.9 | 3.7 | 2.1 | 2.0 | 1.9 | 2.6 | 0.9 | 1.2 | 0.7 |
| Civilian police | −1.5 | −1.5 | −3.5 | −10.7 | −12.0 | −3.8 | −5.8 | −0.7 | −4.3 |
| Military personnel | 24.8 | 7.4 | −8.6 | −6.7 | −6.7 | −2.0 | −5.9 | −8.4 | −7.0 |
| Other branches | 0.6 | 6.5 | 4.4 | 4.9 | 8.5 | 9.6 | 2.1 | 7.6 | 4.9 |
| Gross national product | 0.6 | 6.5 | 4.4 | 4.9 | 8.5 | 9.6 | 2.1 | 7.6 | 4.9 |
| GNP in established prices | 3.4 | 6.8 | 5.3 | 5.9 | 8.8 | 9.4 | 3.2 | 7.8 | 5.7 |

**Table A-3 (continued)** *Percent*

**USSR: Annual Growth of GNP by Sector of Origin**

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 7.4 | 7.2 | 7.5 | 5.0 | 6.6 | 6.4 | 5.3 | 7.6 | 6.0 | 5.3 |
| Ferrous metals | 10.0 | 9.0 | 8.2 | 6.3 | 7.0 | 6.8 | 6.4 | 6.0 | 4.9 | 3.4 |
| Nonferrous metals | 8.5 | 8.9 | 8.8 | 7.9 | 6.5 | 7.7 | 10.0 | 9.0 | 8.0 | 5.3 |
| Fuel | 7.1 | 5.7 | 6.8 | 8.5 | 6.4 | 6.0 | 6.7 | 6.1 | 4.2 | 4.7 |
| Electric power | 10.2 | 12.1 | 12.8 | 11.2 | 11.2 | 10.0 | 7.6 | 7.7 | 8.8 | 7.9 |
| Machinery | 9.5 | 9.8 | 10.8 | 3.2 | 6.8 | 5.1 | 4.1 | 8.9 | 7.3 | 6.8 |
| Chemicals | 10.2 | 9.0 | 10.4 | 11.0 | 13.8 | 14.4 | 9.0 | 8.7 | 7.1 | 6.0 |
| Wood, pulp, and paper | −0.3 | 0.1 | 1.3 | 5.0 | 4.5 | 2.0 | 0.2 | 5.1 | 2.2 | 1.6 |
| Construction materials | 11.9 | 7.9 | 4.5 | 2.8 | 5.0 | 8.1 | 6.5 | 7.5 | 4.1 | 2.2 |
| Light industry | 5.7 | 3.0 | 3.1 | 1.7 | 3.7 | 2.0 | 6.9 | 7.6 | 6.9 | 5.7 |
| Food industry | 4.5 | 7.9 | 5.9 | 3.8 | 6.1 | 11.3 | 4.3 | 7.4 | 5.5 | 6.0 |
| Other industry | 7.4 | 7.2 | 7.5 | 5.0 | 6.6 | 6.4 | 5.3 | 7.6 | 6.0 | 5.3 |
| Construction | 6.9 | 4.9 | 4.3 | 3.9 | 5.1 | 6.1 | 3.7 | 7.3 | 4.8 | 3.6 |
| Agriculture | −2.2 | 6.2 | −4.3 | −17.7 | 32.3 | 3.9 | 4.2 | −0.7 | 6.7 | −6.4 |
| Transportation | 10.6 | 8.2 | 8.7 | 9.4 | 10.3 | 13.4 | 7.0 | 9.3 | 7.2 | 5.2 |
| Freight | 10.4 | 7.4 | 7.0 | 9.2 | 11.3 | 15.0 | 5.4 | 9.0 | 6.0 | 4.1 |
| Passenger | 11.1 | 10.5 | 13.2 | 10.0 | 7.7 | 9.4 | 11.2 | 10.2 | 10.3 | 7.9 |
| Communications | 7.7 | 6.0 | 6.2 | 6.4 | 7.9 | 10.2 | 10.7 | 10.3 | 6.9 | 8.3 |
| Trade | 6.7 | 4.6 | 5.8 | 4.0 | 4.0 | 6.0 | 7.5 | 7.8 | 7.2 | 5.7 |
| Services | 4.1 | 3.9 | 5.1 | 4.0 | 5.3 | 4.9 | 4.3 | 4.3 | 4.6 | 3.9 |
| Housing | 5.7 | 4.9 | 4.3 | 3.8 | 3.4 | 3.1 | 3.2 | 3.2 | 3.1 | 2.9 |
| Utilities | 9.3 | 9.2 | 8.4 | 8.0 | 7.7 | 7.2 | 6.2 | 5.8 | 5.3 | 5.1 |
| Repair and personal care | 4.8 | 4.6 | 4.8 | 4.9 | 7.3 | 8.7 | 6.5 | 7.4 | 7.1 | 7.4 |
| Recreation | 3.6 | 7.0 | 3.0 | −0.0 | 7.0 | 5.7 | −0.1 | 7.2 | 5.2 | 0.8 |
| Education | 2.8 | 4.5 | 6.9 | 5.5 | 6.7 | 5.9 | 4.8 | 3.6 | 4.2 | 3.1 |
| Health | 4.7 | 4.0 | 3.8 | 2.9 | 4.0 | 4.4 | 3.8 | 2.8 | 4.6 | 3.9 |
| Science | 14.3 | 11.5 | 11.0 | 7.8 | 8.5 | 5.2 | 6.5 | 4.2 | 6.7 | 6.7 |
| Credit and insurance | −1.9 | −0.0 | 2.2 | 1.9 | 2.9 | 0.6 | 4.9 | 5.4 | 5.4 | 5.1 |
| Government administration | −4.0 | −6.9 | 1.9 | 0.4 | 4.1 | 5.3 | 5.4 | 6.9 | 5.6 | 4.9 |
| General agricultural programs | −3.6 | −37.4 | −1.6 | −1.4 | 3.7 | 2.9 | 5.9 | 9.4 | 7.5 | 1.5 |
| Forestry | −1.9 | 0.7 | 2.9 | 2.3 | 1.8 | −1.3 | 2.2 | 1.0 | 2.4 | 1.4 |
| State administration | −5.9 | −0.5 | 1.6 | −0.8 | 4.0 | 7.0 | 5.9 | 6.6 | 4.9 | 5.4 |
| Culture | 1.7 | 3.2 | 6.4 | 5.4 | 6.8 | 5.6 | 4.8 | 10.0 | 10.1 | 8.8 |
| Municipal services | 1.8 | 1.1 | 3.3 | 3.9 | 5.1 | 3.7 | 4.8 | 7.7 | 4.9 | 4.9 |
| Civilian police | −5.9 | −0.5 | 1.6 | −0.8 | 4.0 | 7.0 | 5.9 | 6.6 | 4.9 | 5.4 |
| Military personnel | 0.5 | −2.4 | 4.0 | 3.4 | 3.1 | 2.0 | 2.7 | 4.4 | 4.0 | 2.4 |
| Other branches | 3.2 | 5.7 | 2.7 | −2.3 | 13.0 | 5.6 | 4.8 | 4.5 | 5.9 | 1.5 |
| Gross national product | 3.2 | 5.7 | 2.7 | −2.3 | 13.0 | 5.6 | 4.8 | 4.5 | 5.9 | 1.5 |
| GNP in established prices | 3.8 | 5.6 | 3.4 | −0.7 | 11.4 | 5.9 | 5.1 | 5.3 | 6.0 | 2.5 |

## Table A-3 (continued)
## USSR: Annual Growth of GNP by Sector of Origin Percent

*Percent*

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 5.7 | 4.5 | 4.4 | 6.7 | 6.9 | 5.7 | 3.3 | 3.0 | 2.2 | 1.8 |
| Ferrous metals | 5.7 | 4.4 | 3.5 | 4.2 | 3.3 | 4.7 | 3.2 | 0.8 | 2.6 | −0.9 |
| Nonferrous metals | 6.9 | 5.9 | 5.0 | 6.1 | 6.0 | 5.3 | 1.5 | 1.4 | 1.4 | 1.8 |
| Fuel | 4.9 | 4.9 | 5.0 | 5.3 | 5.1 | 6.0 | 3.9 | 4.1 | 3.3 | 2.6 |
| Electric power | 7.6 | 8.1 | 7.1 | 6.8 | 6.7 | 6.6 | 6.9 | 3.6 | 4.7 | 2.9 |
| Machinery | 3.9 | 3.9 | 5.1 | 11.1 | 10.1 | 5.8 | 4.3 | 3.4 | 2.3 | 3.7 |
| Chemicals | 10.7 | 6.1 | 6.4 | 8.8 | 10.3 | 10.1 | 4.3 | 4.7 | 3.0 | −1.0 |
| Wood, pulp, and paper | 4.9 | 2.5 | 1.8 | 2.7 | 1.6 | 3.8 | −0.4 | 0.1 | −0.8 | −3.3 |
| Construction materials | 10.5 | 6.3 | 4.7 | 5.7 | 4.3 | 5.5 | 2.0 | 1.9 | 1.9 | −1.1 |
| Light industry | 4.9 | 4.4 | 0.8 | 2.9 | 2.4 | 2.5 | 3.9 | 2.3 | 2.5 | 1.5 |
| Food industry | 6.3 | 3.0 | 4.0 | 0.3 | 7.9 | 5.7 | −0.7 | 4.2 | −0.0 | 2.7 |
| Other industry | 5.7 | 4.5 | 4.4 | 6.7 | 6.9 | 5.7 | 3.3 | 3.0 | 2.2 | 1.8 |
| Construction | 8.0 | 6.0 | 4.7 | 3.8 | 3.1 | 3.5 | 0.8 | 0.4 | 0.6 | −1.8 |
| Agriculture | 14.3 | −2.3 | −8.9 | 19.0 | −3.8 | −12.5 | 11.5 | 2.4 | 3.6 | −8.3 |
| Transportation | 6.8 | 7.0 | 5.4 | 7.2 | 7.0 | 5.9 | 4.7 | 1.4 | 4.6 | 3.0 |
| Freight | 6.8 | 6.8 | 4.6 | 8.0 | 6.7 | 5.1 | 4.2 | 3.7 | 5.0 | 2.1 |
| Passenger | 7.1 | 7.5 | 7.2 | 5.4 | 7.8 | 7.8 | 5.7 | −3.7 | 3.7 | 5.1 |
| Communications | 7.1 | 6.7 | 6.7 | 6.2 | 6.1 | 6.2 | 5.2 | 4.5 | 4.3 | 4.8 |
| Trade | 6.9 | 4.8 | 3.6 | 4.9 | 5.4 | 4.9 | 3.9 | 3.0 | 1.3 | 2.7 |
| Services | 3.6 | 3.6 | 3.4 | 3.1 | 3.3 | 3.1 | 2.2 | 2.3 | 2.7 | 2.8 |
| Housing | 2.8 | 2.6 | 2.6 | 2.5 | 2.4 | 2.4 | 2.2 | 2.1 | 2.1 | 2.0 |
| Utilities | 5.5 | 5.0 | 4.2 | 4.8 | 5.6 | 5.8 | 5.7 | 4.7 | 4.7 | 5.1 |
| Repair and personal care | 6.1 | 4.9 | 5.3 | 5.4 | 5.1 | 4.9 | 4.6 | 3.9 | 5.4 | 4.9 |
| Recreation | 1.7 | 2.6 | 3.2 | 1.2 | 5.1 | 3.7 | −3.4 | 1.2 | 2.1 | 2.4 |
| Education | 3.0 | 2.9 | 2.3 | 1.8 | 2.2 | 2.0 | 1.9 | 1.7 | 2.6 | 2.0 |
| Health | 3.0 | 3.4 | 2.7 | 2.2 | 2.5 | 1.9 | 1.9 | 1.3 | 1.0 | 2.6 |
| Science | 8.2 | 6.5 | 7.2 | 6.7 | 4.3 | 4.9 | 1.4 | 2.6 | 3.2 | 4.2 |
| Credit and insurance | 6.7 | 6.6 | 6.6 | 5.2 | 6.3 | 5.1 | 5.1 | 4.9 | 4.8 | 4.4 |
| Government administration | 2.5 | 4.1 | 3.8 | 3.3 | 4.1 | 3.4 | 3.0 | 2.7 | 2.9 | 2.4 |
| General agricultural programs | −0.0 | 6.7 | 4.5 | 4.0 | 4.1 | 4.7 | 9.0 | 2.3 | 6.2 | 3.9 |
| Forestry | 1.4 | 0.4 | 2.3 | −0.5 | 1.4 | 0.7 | −0.9 | 0.4 | 0.9 | −0.2 |
| State administration | 1.9 | 3.3 | 3.6 | 3.2 | 4.2 | 3.3 | 2.1 | 2.2 | 2.1 | 2.4 |
| Culture | 8.3 | 6.9 | 4.2 | 4.7 | 5.4 | 4.0 | 3.8 | 5.6 | 3.7 | 1.9 |
| Municipal services | 3.9 | 5.9 | 4.9 | 3.7 | 4.2 | 3.7 | 2.3 | 3.6 | 3.8 | 3.0 |
| Civilian police | 1.9 | 3.3 | 3.6 | 3.2 | 4.2 | 3.3 | 2.1 | 2.2 | 2.1 | 2.4 |
| Military personnel | 2.7 | 3.5 | 1.9 | 1.3 | 1.3 | 1.3 | 1.1 | 0.1 | 1.3 | 2.3 |
| Other branches | 7.9 | 2.7 | 0.6 | 8.5 | 2.8 | 0.3 | 4.8 | 2.3 | 2.6 | −0.5 |
| Gross national product | 7.9 | 2.7 | 0.6 | 8.5 | 2.8 | 0.3 | 4.8 | 2.3 | 2.6 | −0.5 |
| GNP in established prices | 7.4 | 3.2 | 1.4 | 7.5 | 3.6 | 1.5 | 4.3 | 2.6 | 2.5 | 0.1 |

## Table A-3 (continued)
## USSR: Annual Growth of GNP by Sector of Origin

*Percent*

|  | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Industry | 1.7 | 1.3 | 1.3 | 2.4 | 2.8 | 2.1 | 2.7 | 3.1 |
| Ferrous metals | −0.4 | −0.3 | −0.3 | 2.9 | 1.0 | 0.7 | 3.3 | 1.6 |
| Nonferrous metals | 1.3 | 0.3 | 0.8 | 3.0 | 3.0 | 3.0 | 3.0 | 1.9 |
| Fuel | 1.7 | 1.2 | 1.8 | 1.1 | 0.6 | −0.0 | 3.5 | 1.9 |
| Electric power | 4.5 | 1.9 | 2.6 | 3.2 | 4.7 | 2.9 | 3.6 | 4.1 |
| Machinery | 1.4 | 0.4 | 1.5 | 1.6 | 3.6 | 3.0 | 2.9 | 3.7 |
| Chemicals | 4.2 | 3.9 | 2.0 | 5.8 | 3.2 | 4.1 | 4.8 | 2.6 |
| Wood, pulp, and paper | 2.2 | 1.1 | 0.6 | 3.0 | 2.8 | 2.1 | 4.6 | 4.5 |
| Construction materials | 0.1 | 2.5 | −0.9 | 3.5 | 1.8 | 2.0 | 4.0 | 3.4 |
| Light industry | 2.1 | 1.8 | −0.5 | 1.2 | 2.8 | 2.4 | 1.4 | 1.7 |
| Food industry | 0.7 | 2.6 | 2.9 | 3.4 | 2.1 | −1.8 | −4.9 | 3.6 |
| Other industry | 1.7 | 1.3 | 1.3 | 2.4 | 2.8 | 2.1 | 2.7 | 3.1 |
| Construction | −0.2 | 0.3 | −1.8 | 3.0 | 1.9 | 2.3 | 3.8 | 2.4 |
| Agriculture | −6.9 | −2.4 | 8.9 | 5.9 | −2.1 | −3.8 | 10.3 | −4.0 |
| Transportation | 4.4 | 3.7 | 1.0 | 2.7 | 1.3 | 2.2 | 3.0 | 1.2 |
| Freight | 4.2 | 3.6 | 0.8 | 2.9 | 0.8 | 1.9 | 2.8 | 0.6 |
| Passenger | 4.9 | 3.8 | 1.7 | 2.2 | 2.5 | 2.8 | 3.3 | 2.5 |
| Communications | 4.7 | 4.3 | 2.2 | 3.5 | 4.7 | 4.7 | 5.5 | 6.8 |
| Trade | 2.4 | 1.8 | 0.4 | 2.7 | 2.7 | 1.2 | 0.4 | 2.1 |
| Services | 3.0 | 2.4 | 1.7 | 2.2 | 2.4 | 2.4 | 2.2 | 3.2 |
| Housing | 1.9 | 2.3 | 2.8 | 2.8 | 2.5 | 2.4 | 2.7 | 2.9 |
| Utilities | 4.4 | 4.4 | 4.7 | 4.5 | 5.5 | 5.4 | 4.4 | 4.2 |
| Repair and personal care | 5.1 | 4.1 | 2.9 | 4.3 | 4.0 | 4.3 | 4.0 | 7.0 |
| Recreation | 4.1 | 1.9 | 0.8 | 0.2 | 0.9 | 2.3 | −0.3 | 0.8 |
| Education | 2.9 | 1.3 | 1.4 | 1.0 | 1.5 | 2.1 | 2.3 | 3.0 |
| Health | 0.3 | 1.6 | 1.8 | 1.8 | 1.7 | 1.7 | 1.5 | 3.0 |
| Science | 5.6 | 3.1 | −2.3 | 2.4 | 2.8 | 1.7 | 1.3 | 3.3 |
| Credit and insurance | 2.4 | 1.7 | 1.9 | 0.6 | 0.6 | −0.7 | −1.3 | 0.6 |
| Government administration | 3.5 | 2.4 | 1.6 | 1.1 | 1.5 | 0.9 | 1.5 | 1.7 |
| General agricultural programs | 6.0 | 4.6 | 4.3 | 2.0 | 3.0 | 3.3 | −2.8 | 0.2 |
| Forestry | −0.3 | −0.0 | −0.2 | −0.2 | −0.3 | −0.2 | −0.4 | −2.2 |
| State administration | 3.2 | 2.2 | 1.1 | 1.2 | 1.4 | 0.2 | 2.6 | 2.0 |
| Culture | 4.1 | 3.1 | 1.9 | −0.1 | 1.0 | 0.8 | 2.2 | 3.6 |
| Municipal services | 3.4 | 1.1 | 0.6 | 1.6 | 2.1 | 2.3 | 2.1 | 1.2 |
| Civilian police | 3.2 | 2.2 | 1.1 | 1.2 | 1.4 | 0.2 | 2.6 | 2.0 |
| Military personnel | 3.3 | 0.5 | 1.9 | 1.4 | 0.5 | 0.2 | 0.4 | −0.0 |
| Other branches | 0.3 | 0.9 | 2.6 | 3.2 | 1.4 | 0.9 | 4.0 | 1.3 |
| Gross national product | 0.3 | 0.9 | 2.6 | 3.2 | 1.4 | 0.9 | 4.0 | 1.3 |
| GNP in established prices | 0.6 | 1.1 | 2.1 | 2.9 | 1.6 | 0.8 | 3.3 | 1.6 |

## Table A-4
## USSR: Indexes of GNP by Sector of Origin

*1982 = 100*

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 15.7 | 17.7 | 19.1 | 20.7 | 22.6 | 25.0 | 26.7 | 28.4 | 30.7 | 33.4 |
| Ferrous metals | 17.1 | 19.4 | 22.1 | 24.3 | 26.6 | 29.1 | 31.2 | 33.1 | 35.5 | 38.4 |
| Nonferrous metals | 13.3 | 15.0 | 16.9 | 18.8 | 20.6 | 23.9 | 25.3 | 26.8 | 28.3 | 30.1 |
| Fuel | 14.8 | 16.2 | 17.4 | 18.6 | 20.6 | 23.5 | 25.8 | 28.8 | 31.3 | 33.7 |
| Electric power | 6.8 | 7.8 | 8.9 | 10.0 | 11.2 | 12.6 | 14.2 | 15.6 | 17.5 | 19.6 |
| Machinery | 15.4 | 17.0 | 18.3 | 19.6 | 21.1 | 23.4 | 24.5 | 25.2 | 26.5 | 28.7 |
| Chemicals | 7.6 | 8.2 | 8.9 | 9.8 | 11.3 | 12.8 | 14.5 | 15.9 | 17.6 | 19.1 |
| Wood, pulp, and paper | 36.6 | 41.7 | 43.2 | 44.8 | 49.4 | 52.0 | 53.9 | 57.7 | 62.9 | 68.6 |
| Construction materials | 9.6 | 11.2 | 12.8 | 14.8 | 17.0 | 20.3 | 22.6 | 26.7 | 31.7 | 36.7 |
| Light industry | 23.0 | 27.2 | 28.9 | 31.5 | 34.9 | 37.3 | 38.8 | 40.5 | 43.5 | 46.8 |
| Food industry | 16.2 | 18.7 | 20.4 | 22.7 | 24.1 | 25.9 | 29.5 | 31.4 | 33.8 | 37.1 |
| Other industry | 15.7 | 17.7 | 19.1 | 20.7 | 22.6 | 25.0 | 26.7 | 28.4 | 30.7 | 33.4 |
| Construction | 18.0 | 20.5 | 22.5 | 24.8 | 27.4 | 30.8 | 33.3 | 37.0 | 41.7 | 46.8 |
| Agriculture | 56.9 | 49.8 | 53.2 | 55.3 | 56.7 | 63.4 | 74.2 | 71.5 | 77.8 | 78.7 |
| Transportation | 8.0 | 9.0 | 9.9 | 11.0 | 12.2 | 14.6 | 16.4 | 18.8 | 20.9 | 23.3 |
| Freight | 8.0 | 9.0 | 9.9 | 10.9 | 12.1 | 14.9 | 17.0 | 19.5 | 21.8 | 24.4 |
| Passenger | 8.1 | 9.0 | 10.0 | 11.1 | 12.4 | 14.2 | 15.0 | 17.0 | 18.8 | 20.5 |
| Communications | 11.8 | 13.0 | 14.3 | 15.2 | 16.6 | 17.9 | 19.4 | 20.8 | 22.1 | 23.6 |
| Trade | 15.7 | 17.3 | 19.0 | 21.2 | 23.6 | 25.9 | 28.2 | 30.5 | 33.4 | 35.7 |
| Services | 34.2 | 35.2 | 36.3 | 36.9 | 38.2 | 38.9 | 39.9 | 41.0 | 43.0 | 44.8 |
| Housing | 37.4 | 38.3 | 39.3 | 40.3 | 41.4 | 42.6 | 44.1 | 45.9 | 48.3 | 51.0 |
| Utilities | 14.4 | 15.0 | 15.6 | 16.5 | 17.6 | 18.8 | 20.1 | 21.8 | 24.2 | 26.5 |
| Repair and personal care | 20.0 | 20.6 | 21.4 | 22.2 | 23.1 | 24.0 | 24.1 | 24.5 | 26.2 | 29.3 |
| Recreation | 19.5 | 22.5 | 25.4 | 26.4 | 31.2 | 38.4 | 42.7 | 46.0 | 50.7 | 52.6 |
| Education | 36.9 | 38.1 | 39.3 | 40.3 | 42.2 | 43.9 | 44.5 | 45.4 | 46.5 | 47.5 |
| Health | 35.0 | 36.4 | 37.9 | 39.2 | 41.9 | 44.6 | 45.8 | 47.8 | 50.4 | 52.8 |
| Science | 12.1 | 13.2 | 14.3 | 14.9 | 15.7 | 17.1 | 19.2 | 21.2 | 23.9 | 26.4 |
| Credit and insurance | 47.3 | 47.0 | 46.7 | 46.8 | 46.9 | 47.0 | 46.0 | 44.0 | 43.6 | 42.4 |
| Government administration | 69.6 | 69.8 | 70.1 | 68.3 | 66.7 | 58.6 | 57.6 | 55.0 | 55.4 | 54.1 |
| General agricultural programs | 47.8 | 52.5 | 57.1 | 60.2 | 84.4 | 62.4 | 65.1 | 63.4 | 67.9 | 70.3 |
| Forestry | 117.1 | 119.2 | 121.2 | 108.9 | 105.1 | 101.5 | 99.3 | 93.7 | 90.6 | 84.5 |
| State administration | 85.6 | 84.3 | 83.0 | 80.1 | 71.5 | 62.9 | 60.5 | 57.0 | 56.6 | 54.1 |
| Culture | 24.6 | 25.4 | 26.2 | 26.9 | 28.1 | 29.2 | 29.5 | 30.0 | 30.7 | 31.1 |
| Municipal services | 36.0 | 37.4 | 38.8 | 39.6 | 40.4 | 41.1 | 42.2 | 42.6 | 43.1 | 43.4 |
| Civilian police | 85.6 | 84.3 | 83.0 | 80.1 | 71.5 | 62.9 | 60.5 | 57.0 | 56.6 | 54.1 |
| Military personnel | 75.5 | 94.2 | 101.2 | 92.5 | 86.2 | 80.4 | 78.9 | 74.2 | 68.0 | 63.2 |
| Other branches | 28.5 | 28.7 | 30.5 | 31.9 | 33.4 | 36.3 | 39.7 | 40.6 | 43.7 | 45.8 |
| Gross national product | 28.5 | 28.7 | 30.5 | 31.9 | 33.4 | 36.3 | 39.7 | 40.6 | 43.7 | 45.8 |
| GNP in established prices | 25.1 | 25.9 | 27.7 | 29.2 | 30.9 | 33.6 | 36.8 | 37.9 | 40.9 | 43.2 |

## Table A-4 (continued)
## USSR: Indexes of GNP by Sector of Origin

*1982 = 100*

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 35.9 | 38.5 | 41.4 | 43.4 | 46.3 | 49.3 | 51.9 | 55.8 | 59.2 | 62.3 |
| Ferrous metals | 42.3 | 46.1 | 49.9 | 53.0 | 56.7 | 60.5 | 64.4 | 68.2 | 71.6 | 74.0 |
| Nonferrous metals | 32.7 | 35.6 | 38.7 | 41.8 | 44.5 | 47.9 | 52.7 | 57.4 | 62.0 | 65.3 |
| Fuel | 36.1 | 38.1 | 40.7 | 44.2 | 47.0 | 49.8 | 53.1 | 56.4 | 58.7 | 61.5 |
| Electric power | 21.6 | 24.3 | 27.4 | 30.5 | 33.9 | 37.3 | 40.1 | 43.2 | 47.0 | 50.7 |
| Machinery | 31.4 | 34.5 | 38.2 | 39.4 | 42.1 | 44.3 | 46.1 | 50.2 | 53.9 | 57.6 |
| Chemicals | 21.0 | 22.9 | 25.3 | 28.1 | 31.9 | 36.6 | 39.9 | 43.3 | 46.4 | 49.2 |
| Wood, pulp, and paper | 68.4 | 68.5 | 69.3 | 72.8 | 76.0 | 77.6 | 77.7 | 81.7 | 83.5 | 84.8 |
| Construction materials | 41.0 | 44.3 | 46.3 | 47.5 | 49.9 | 54.0 | 57.4 | 61.8 | 64.3 | 65.7 |
| Light industry | 49.4 | 50.9 | 52.5 | 53.4 | 55.4 | 56.5 | 60.4 | 65.0 | 69.5 | 73.4 |
| Food industry | 38.8 | 41.8 | 44.3 | 46.0 | 48.8 | 54.3 | 56.6 | 60.8 | 64.1 | 68.0 |
| Other industry | 35.9 | 38.5 | 41.4 | 43.4 | 46.3 | 49.3 | 51.9 | 55.8 | 59.2 | 62.3 |
| Construction | 50.1 | 52.5 | 54.8 | 56.9 | 59.8 | 63.5 | 65.9 | 70.7 | 74.1 | 76.8 |
| Agriculture | 77.0 | 81.7 | 78.2 | 64.4 | 85.2 | 88.5 | 92.3 | 91.6 | 97.7 | 91.5 |
| Transportation | 25.7 | 27.8 | 30.2 | 33.1 | 36.5 | 41.4 | 44.3 | 48.4 | 51.9 | 54.6 |
| Freight | 27.0 | 29.0 | 31.0 | 33.8 | 37.7 | 43.3 | 45.6 | 49.7 | 52.7 | 54.9 |
| Passenger | 22.8 | 25.2 | 28.5 | 31.4 | 33.8 | 36.9 | 41.1 | 45.3 | 49.9 | 53.9 |
| Communications | 25.4 | 26.9 | 28.6 | 30.4 | 32.8 | 36.1 | 40.0 | 44.1 | 47.2 | 51.1 |
| Trade | 38.1 | 39.9 | 42.2 | 43.9 | 45.7 | 48.4 | 52.1 | 56.1 | 60.1 | 63.6 |
| Services | 46.7 | 48.5 | 51.0 | 53.0 | 55.8 | 58.5 | 61.0 | 63.6 | 66.6 | 69.2 |
| Housing | 53.9 | 56.6 | 59.0 | 61.3 | 63.3 | 65.3 | 67.4 | 69.5 | 71.7 | 73.8 |
| Utilities | 29.0 | 31.7 | 34.3 | 37.0 | 39.9 | 42.8 | 45.4 | 48.0 | 50.6 | 53.2 |
| Repair and personal care | 30.8 | 32.2 | 33.7 | 35.4 | 37.9 | 41.3 | 43.9 | 47.2 | 50.5 | 54.3 |
| Recreation | 54.5 | 58.3 | 60.1 | 60.1 | 64.3 | 67.9 | 67.8 | 72.7 | 76.5 | 77.2 |
| Education | 48.8 | 51.0 | 54.6 | 57.6 | 61.4 | 65.0 | 68.2 | 70.6 | 73.5 | 75.8 |
| Health | 55.2 | 57.4 | 59.6 | 61.3 | 63.8 | 66.6 | 69.1 | 71.1 | 74.3 | 77.2 |
| Science | 30.2 | 33.7 | 37.4 | 40.3 | 43.7 | 46.0 | 49.0 | 51.1 | 54.5 | 58.2 |
| Credit and insurance | 41.6 | 41.6 | 42.5 | 43.3 | 44.5 | 44.8 | 47.0 | 49.5 | 52.2 | 54.9 |
| Government administration | 51.9 | 48.3 | 49.3 | 49.4 | 51.5 | 54.2 | 57.2 | 61.1 | 64.5 | 67.7 |
| General agricultural programs | 67.8 | 42.5 | 41.8 | 41.2 | 42.7 | 44.0 | 46.6 | 50.9 | 54.7 | 55.6 |
| Forestry | 82.9 | 83.5 | 86.0 | 88.0 | 89.5 | 88.4 | 90.4 | 91.3 | 93.5 | 94.8 |
| State administration | 51.0 | 50.7 | 51.5 | 51.1 | 53.2 | 56.9 | 60.3 | 64.2 | 67.4 | 71.0 |
| Culture | 31.6 | 32.6 | 34.7 | 36.6 | 39.1 | 41.3 | 43.3 | 47.6 | 52.4 | 57.0 |
| Municipal services | 44.1 | 44.6 | 46.1 | 47.9 | 50.3 | 52.2 | 54.7 | 59.0 | 61.9 | 64.9 |
| Civilian police | 51.0 | 50.7 | 51.5 | 51.1 | 53.2 | 56.9 | 60.3 | 64.2 | 67.4 | 71.0 |
| Military personnel | 63.6 | 62.0 | 64.5 | 66.7 | 68.7 | 70.1 | 72.0 | 75.2 | 78.2 | 80.1 |
| Other branches | 47.3 | 50.0 | 51.3 | 50.1 | 56.7 | 59.8 | 62.7 | 65.5 | 69.4 | 70.5 |
| Gross national product | 47.3 | 50.0 | 51.3 | 50.1 | 56.7 | 59.8 | 62.7 | 65.5 | 69.4 | 70.5 |
| GNP in established prices | 44.9 | 47.4 | 49.0 | 48.7 | 54.2 | 57.4 | 60.3 | 63.5 | 67.3 | 69.0 |

## Table A-4 (continued)
## USSR: Indexes of GNP by Sector of Origin

*1982=100*

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 65.9 | 68.9 | 71.9 | 76.7 | 82.0 | 86.7 | 89.5 | 92.2 | 94.2 | 95.9 |
| Ferrous metals | 78.3 | 81.7 | 84.6 | 88.2 | 91.1 | 95.4 | 98.5 | 99.3 | 101.8 | 100.9 |
| Nonferrous metals | 69.8 | 73.9 | 77.7 | 82.4 | 87.3 | 91.9 | 93.3 | 94.6 | 95.9 | 97.6 |
| Fuel | 64.5 | 67.6 | 71.0 | 74.7 | 78.5 | 83.2 | 86.5 | 90.0 | 93.0 | 95.4 |
| Electric power | 54.6 | 59.0 | 63.2 | 67.5 | 72.0 | 76.8 | 82.1 | 85.0 | 88.9 | 91.6 |
| Machinery | 59.8 | 62.2 | 65.3 | 72.5 | 79.9 | 84.5 | 88.2 | 91.1 | 93.3 | 96.7 |
| Chemicals | 54.5 | 57.8 | 61.5 | 66.9 | 73.8 | 81.3 | 84.8 | 88.7 | 91.4 | 90.5 |
| Wood, pulp, and paper | 88.9 | 91.2 | 92.8 | 95.3 | 96.9 | 100.5 | 100.2 | 100.3 | 99.5 | 96.2 |
| Construction materials | 72.6 | 77.2 | 80.8 | 85.4 | 89.1 | 94.0 | 95.8 | 97.6 | 99.5 | 98.4 |
| Light industry | 77.0 | 80.4 | 81.0 | 83.4 | 85.4 | 87.5 | 90.9 | 92.9 | 95.2 | 96.7 |
| Food industry | 72.2 | 74.4 | 77.3 | 77.6 | 83.7 | 88.5 | 87.9 | 91.6 | 91.6 | 94.0 |
| Other industry | 65.9 | 68.9 | 71.9 | 76.7 | 82.0 | 86.7 | 89.5 | 92.2 | 94.2 | 95.9 |
| Construction | 82.9 | 87.9 | 92.0 | 95.4 | 98.4 | 101.8 | 102.7 | 103.1 | 103.6 | 101.7 |
| Agriculture | 104.6 | 102.2 | 93.1 | 110.7 | 106.5 | 93.2 | 103.9 | 106.4 | 110.2 | 101.1 |
| Transportation | 58.3 | 62.4 | 65.8 | 70.5 | 75.5 | 79.9 | 83.7 | 84.9 | 88.8 | 91.4 |
| Freight | 58.6 | 62.6 | 65.5 | 70.7 | 75.5 | 79.3 | 82.7 | 85.7 | 90.0 | 91.9 |
| Passenger | 57.7 | 62.0 | 66.5 | 70.0 | 75.5 | 81.4 | 86.0 | 82.9 | 86.0 | 90.3 |
| Communications | 54.7 | 58.4 | 62.3 | 66.2 | 70.3 | 74.6 | 78.5 | 82.0 | 85.5 | 89.6 |
| Trade | 68.0 | 71.2 | 73.8 | 77.5 | 81.6 | 85.7 | 89.0 | 91.7 | 92.9 | 95.4 |
| Services | 71.7 | 74.3 | 76.8 | 79.2 | 81.8 | 84.4 | 86.2 | 88.3 | 90.7 | 93.2 |
| Housing | 75.8 | 77.8 | 79.8 | 81.8 | 83.8 | 85.8 | 87.7 | 89.6 | 91.5 | 93.3 |
| Utilities | 56.1 | 58.9 | 61.4 | 64.3 | 68.0 | 71.9 | 75.9 | 79.5 | 83.3 | 87.6 |
| Repair and personal care | 57.6 | 60.4 | 63.6 | 67.0 | 70.5 | 73.9 | 77.3 | 80.4 | 84.7 | 88.8 |
| Recreation | 78.5 | 80.5 | 83.1 | 84.1 | 88.4 | 91.7 | 88.5 | 89.6 | 91.4 | 93.6 |
| Education | 78.1 | 80.3 | 82.2 | 83.6 | 85.5 | 87.2 | 88.8 | 90.4 | 92.7 | 94.6 |
| Health | 79.5 | 82.2 | 84.5 | 86.3 | 88.5 | 90.2 | 91.9 | 93.1 | 94.0 | 96.4 |
| Science | 63.0 | 67.1 | 71.9 | 76.7 | 80.0 | 83.9 | 85.1 | 87.4 | 90.1 | 93.9 |
| Credit and insurance | 58.5 | 62.3 | 66.5 | 69.9 | 74.3 | 78.1 | 82.1 | 86.1 | 90.2 | 94.2 |
| Government administration | 69.4 | 72.2 | 74.9 | 77.4 | 80.6 | 83.3 | 85.8 | 88.1 | 90.6 | 92.9 |
| General agricultural programs | 55.6 | 59.3 | 62.0 | 64.4 | 67.1 | 70.2 | 76.6 | 78.3 | 83.2 | 86.4 |
| Forestry | 96.2 | 96.5 | 98.8 | 98.3 | 99.7 | 100.4 | 99.4 | 99.9 | 100.8 | 100.5 |
| State administration | 72.3 | 74.7 | 77.3 | 79.8 | 83.1 | 85.9 | 87.7 | 89.6 | 91.5 | 93.7 |
| Culture | 61.7 | 66.0 | 68.8 | 72.0 | 75.9 | 78.9 | 81.9 | 86.5 | 89.7 | 91.4 |
| Municipal services | 67.5 | 71.4 | 74.9 | 77.7 | 81.0 | 83.9 | 85.9 | 89.0 | 92.4 | 95.1 |
| Civilian police | 72.3 | 74.7 | 77.3 | 79.8 | 83.1 | 85.9 | 87.7 | 89.6 | 91.5 | 93.7 |
| Military personnel | 82.3 | 85.2 | 86.8 | 87.9 | 89.0 | 90.2 | 91.2 | 91.3 | 92.5 | 94.6 |
| Other branches | 76.0 | 78.1 | 78.6 | 85.3 | 87.7 | 88.0 | 92.2 | 94.4 | 96.8 | 96.3 |
| Gross national product | 76.0 | 78.1 | 78.6 | 85.3 | 87.7 | 88.0 | 92.2 | 94.4 | 96.8 | 96.3 |
| GNP in established prices | 74.1 | 76.5 | 77.5 | 83.4 | 86.3 | 87.7 | 91.4 | 93.8 | 96.1 | 96.2 |

## Table A-4 (Continued)
## USSR: Indexes of GNP by Sector of Origin

*1982=100*

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Industry | 97.5 | 98.7 | 100.0 | 102.4 | 105.3 | 107.5 | 110.4 | 113.8 |
| Ferrous metals | 100.5 | 100.3 | 100.0 | 102.9 | 103.9 | 104.6 | 108.0 | 109.7 |
| Nonferrous metals | 98.9 | 99.2 | 100.0 | 103.0 | 106.1 | 109.3 | 112.6 | 114.7 |
| Fuel | 97.0 | 98.2 | 100.0 | 101.1 | 101.7 | 101.7 | 105.2 | 107.2 |
| Electric power | 95.7 | 97.5 | 100.0 | 103.2 | 108.0 | 111.2 | 115.1 | 119.9 |
| Machinery | 98.1 | 98.5 | 100.0 | 101.6 | 105.2 | 108.3 | 111.5 | 115.6 |
| Chemicals | 94.3 | 98.0 | 100.0 | 105.8 | 109.3 | 113.7 | 119.2 | 122.3 |
| Wood, pulp, and paper | 98.3 | 99.4 | 100.0 | 103.0 | 105.9 | 108.2 | 113.2 | 118.2 |
| Construction materials | 98.5 | 100.9 | 100.0 | 103.5 | 105.3 | 107.5 | 111.7 | 115.5 |
| Light industry | 98.7 | 100.5 | 100.0 | 101.2 | 104.1 | 106.6 | 108.1 | 110.0 |
| Food industry | 94.7 | 97.2 | 100.0 | 103.4 | 105.7 | 103.7 | 98.6 | 102.2 |
| Other industry | 97.5 | 98.7 | 100.0 | 102.4 | 105.3 | 107.5 | 110.4 | 113.8 |
| Construction | 101.5 | 101.8 | 100.0 | 103.0 | 105.0 | 107.3 | 111.4 | 114.1 |
| Agriculture | 94.1 | 91.8 | 100.0 | 105.9 | 103.7 | 99.7 | 110.0 | 105.6 |
| Transportation | 95.4 | 99.0 | 100.0 | 102.7 | 104.0 | 106.3 | 109.5 | 110.7 |
| Freight | 95.8 | 99.3 | 100.0 | 102.9 | 103.7 | 105.7 | 108.7 | 109.3 |
| Passenger | 94.7 | 98.3 | 100.0 | 102.2 | 104.8 | 107.7 | 111.3 | 114.1 |
| Communications | 93.8 | 97.9 | 100.0 | 103.5 | 108.3 | 113.4 | 119.6 | 127.8 |
| Trade | 97.8 | 99.6 | 100.0 | 102.7 | 105.6 | 106.8 | 107.3 | 109.6 |
| Services | 96.0 | 98.3 | 100.0 | 102.2 | 104.6 | 107.1 | 109.5 | 113.0 |
| Housing | 95.1 | 97.3 | 100.0 | 102.8 | 105.4 | 108.0 | 110.9 | 114.1 |
| Utilities | 91.5 | 95.5 | 100.0 | 104.5 | 110.3 | 116.3 | 121.4 | 126.6 |
| Repair and personal care | 93.4 | 97.2 | 100.0 | 104.3 | 108.4 | 113.1 | 117.5 | 125.8 |
| Recreation | 97.4 | 99.2 | 100.0 | 100.2 | 101.2 | 103.5 | 103.1 | 104.0 |
| Education | 97.3 | 98.6 | 100.0 | 101.0 | 102.5 | 104.7 | 107.1 | 110.4 |
| Health | 96.7 | 98.3 | 100.0 | 101.8 | 103.5 | 105.2 | 106.8 | 110.0 |
| Science | 99.2 | 102.3 | 100.0 | 102.4 | 105.3 | 107.1 | 108.5 | 112.0 |
| Credit and insurance | 96.5 | 98.1 | 100.0 | 100.6 | 101.2 | 100.5 | 99.2 | 99.8 |
| Government administration | 96.1 | 98.5 | 100.0 | 101.1 | 102.6 | 103.6 | 105.2 | 106.9 |
| General agricultural programs | 91.6 | 95.9 | 100.0 | 102.0 | 105.0 | 108.5 | 105.5 | 105.8 |
| Forestry | 100.3 | 100.2 | 100.0 | 99.8 | 99.6 | 99.4 | 99.0 | 96.8 |
| State administration | 96.8 | 98.9 | 100.0 | 101.2 | 102.6 | 102.8 | 105.5 | 107.6 |
| Culture | 95.2 | 98.2 | 100.0 | 99.9 | 100.9 | 101.8 | 104.0 | 107.7 |
| Municipal services | 98.3 | 99.4 | 100.0 | 101.6 | 103.8 | 106.2 | 108.4 | 109.8 |
| Civilian police | 96.8 | 98.9 | 100.0 | 101.2 | 102.6 | 102.8 | 105.5 | 107.6 |
| Military personnel | 97.7 | 98.2 | 100.0 | 101.4 | 102.0 | 102.2 | 102.6 | 102.6 |
| Other branches | 96.6 | 97.5 | 100.0 | 103.2 | 104.7 | 105.6 | 109.8 | 111.3 |
| Gross national product | 96.6 | 97.5 | 100.0 | 103.2 | 104.7 | 105.6 | 109.8 | 111.3 |
| GNP in established prices | 96.8 | 97.9 | 100.0 | 102.9 | 104.5 | 105.3 | 108.8 | 110.6 |

## Table A-5
## USSR: Shares of GNP by Sector of Origin

*Percent*

| | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 17.8 | 22.3 | 24.6 | 26.6 | 28.1 | 31.9 | 31.4 | 31.6 | 31.5 | 32.2 |
| Ferrous metals | 1.2 | 1.6 | 1.7 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 |
| Nonferrous metals | 0.6 | 0.8 | 0.9 | 1.0 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Fuel | 1.6 | 2.0 | 2.4 | 2.6 | 2.6 | 2.9 | 2.9 | 2.9 | 3.0 | 3.1 |
| Electric power | 0.5 | 0.8 | 1.1 | 1.4 | 1.6 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 |
| Machinery | 6.2 | 7.4 | 7.6 | 8.5 | 9.0 | 11.0 | 10.9 | 11.1 | 11.0 | 11.5 |
| Chemicals | 0.6 | 0.8 | 1.1 | 1.5 | 1.7 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 |
| Wood, pulp, and paper | 2.5 | 2.8 | 2.8 | 2.5 | 2.3 | 2.2 | 2.1 | 2.1 | 2.0 | 1.9 |
| Construction materials | 0.7 | 1.1 | 1.7 | 1.7 | 1.9 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 |
| Light industry | 1.8 | 2.3 | 2.3 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| Food industry | 1.5 | 1.8 | 2.1 | 2.3 | 2.4 | 2.6 | 2.4 | 2.5 | 2.4 | 2.5 |
| Other industry | 0.7 | 0.9 | 1.0 | 1.1 | 1.1 | 1.3 | 1.2 | 1.3 | 1.3 | 1.3 |
| Construction | 4.9 | 6.6 | 8.3 | 8.3 | 8.5 | 9.1 | 8.7 | 8.5 | 8.4 | 8.3 |
| Agriculture | 41.2 | 36.1 | 33.6 | 30.5 | 28.4 | 21.9 | 23.3 | 23.3 | 23.5 | 21.6 |
| Transportation | 2.7 | 3.9 | 5.2 | 6.6 | 7.3 | 8.7 | 8.6 | 8.6 | 8.7 | 9.0 |
| Freight | 1.9 | 2.7 | 3.8 | 4.8 | 5.2 | 6.0 | 6.0 | 6.1 | 6.2 | 6.4 |
| Passenger | 0.8 | 1.1 | 1.4 | 1.8 | 2.2 | 2.6 | 2.7 | 2.5 | 2.5 | 2.7 |
| Communications | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 |
| Trade | 3.6 | 4.6 | 5.2 | 5.2 | 5.8 | 6.3 | 6.3 | 6.3 | 6.2 | 6.4 |
| Services | 24.1 | 21.6 | 19.9 | 19.7 | 19.0 | 19.3 | 18.8 | 18.8 | 18.8 | 19.5 |
| Housing | 7.2 | 6.5 | 6.3 | 6.0 | 5.5 | 5.4 | 5.2 | 5.2 | 5.2 | 5.3 |
| Utilities | 0.7 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 |
| Repair and personal care | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.4 | 1.4 | 1.4 | 1.4 | 1.5 |
| Recreation | 0.7 | 1.1 | 1.2 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 |
| Education | 5.0 | 4.7 | 4.0 | 4.2 | 4.0 | 3.8 | 3.7 | 3.7 | 3.7 | 3.8 |
| Health | 2.6 | 2.6 | 2.5 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 |
| Science | 0.9 | 1.0 | 1.4 | 1.7 | 1.8 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 |
| Credit and insurance | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Government administration | 5.4 | 3.6 | 2.4 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
| General agricultural programs | 0.5 | 0.5 | 0.5 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Forestry | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| State administration | 2.5 | 1.4 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Culture | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Municipal services | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Civilian police | 1.4 | 0.8 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Military personnel | 5.0 | 4.2 | 2.6 | 2.2 | 2.1 | 1.9 | 1.9 | 1.8 | 1.8 | 1.9 |
| Other branches | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Gross national product | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table A-5 (continued)** *Percent*

**USSR: Shares of GNP by Sector of Origin**

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Industry | 32.7 | 32.8 | 32.4 | 32.1 | 32.6 | 33.0 | 32.5 | 33.1 |
| Ferrous metals | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 |
| Nonferrous metals | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Fuel | 3.1 | 3.1 | 3.1 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Electric power | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 |
| Machinery | 11.6 | 11.6 | 11.4 | 11.3 | 11.5 | 11.7 | 11.6 | 11.9 |
| Chemicals | 2.3 | 2.4 | 2.4 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 |
| Wood, pulp, and paper | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.1 |
| Construction materials | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 |
| Light industry | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| Food industry | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.5 | 2.3 | 2.4 |
| Other industry | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Construction | 8.2 | 8.2 | 7.8 | 7.8 | 7.8 | 8.0 | 7.9 | 8.0 |
| Agriculture | 20.1 | 19.4 | 20.6 | 21.2 | 20.4 | 19.5 | 20.7 | 19.6 |
| Transportation | 9.4 | 9.7 | 9.5 | 9.5 | 9.5 | 9.6 | 9.5 | 9.5 |
| Freight | 6.6 | 6.8 | 6.7 | 6.7 | 6.6 | 6.7 | 6.6 | 6.6 |
| Passenger | 2.8 | 2.9 | 2.8 | 2.8 | 2.8 | 2.9 | 2.9 | 2.9 |
| Communications | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | - 1.0 |
| Trade | 6.6 | 6.6 | 6.5 | 6.4 | 6.5 | 6.6 | 6.3 | 6.4 |
| Services | 20.0 | 20.3 | 20.1 | 19.9 | 20.1 | 20.4 | 20.1 | 20.4 |
| Housing | 5.4 | 5.5 | 5.5 | 5.5 | 5.6 | 5.6 | 5.6 | 5.7 |
| Utilities | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 | 1.5 |
| Repair and personal care | 1.6 | 1.6 | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.8 |
| Recreation | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Education | 3.9 | 3.9 | 3.9 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 |
| Health | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 |
| Science | 2.2 | 2.3 | 2.2 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 |
| Credit and insurance | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Government administration | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 |
| General agricultural programs | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Forestry | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| State administration | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Culture | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Municipal services | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Civilian police | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Military personnel | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.7 |
| Other branches | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Gross national product | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

## Table A-6
## USSR: GNP by End Use at 1982 Factor Cost

*Billion 1982 rubles*

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 102.2 | 101.6 | 108.0 | 115.0 | 121.7 | 128.3 | 134.2 | 143.8 | 154.1 | 160.5 |
| Consumer goods | 66.9 | 65.1 | 70.0 | 75.6 | 80.0 | 84.3 | 88.4 | 96.0 | 103.8 | 107.3 |
| Food | 58.9 | 56.0 | 60.3 | 64.5 | 67.1 | 70.5 | 73.5 | 79.6 | 86.0 | 88.1 |
| Animal products | 28.4 | 28.7 | 29.3 | 30.7 | 32.2 | 33.1 | 35.8 | 39.5 | 45.0 | 46.8 |
| Processed foods | 2.5 | 3.3 | 3.7 | 4.4 | 3.6 | 4.4 | 4.8 | 5.0 | 5.2 | 5.5 |
| Basic foods | 24.3 | 19.8 | 22.7 | 24.1 | 25.4 | 26.3 | 25.9 | 27.4 | 27.7 | 27.9 |
| Beverages | 3.7 | 4.1 | 4.6 | 5.4 | 5.9 | 6.6 | 6.9 | 7.7 | 8.1 | 8.0 |
| Soft goods | 6.9 | 7.8 | 8.2 | 9.1 | 10.5 | 11.1 | 12.0 | 12.8 | 13.9 | 14.9 |
| Durables | 1.1 | 1.3 | 1.5 | 1.9 | 2.5 | 2.7 | 2.9 | 3.6 | 3.9 | 4.3 |
| Consumer services | 35.3 | 36.5 | 38.0 | 39.5 | 41.6 | 44.1 | 45.7 | 47.8 | 50.4 | 53.2 |
| Household services | 19.8 | 20.6 | 21.5 | 22.3 | 23.3 | 24.7 | 25.7 | 27.0 | 28.8 | 30.7 |
| Housing | 13.5 | 13.8 | 14.2 | 14.6 | 15.0 | 15.4 | 15.9 | 16.6 | 17.5 | 18.5 |
| Utilities | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.4 | 2.5 |
| Transportation | 0.8 | 0.9 | 0.9 | 1.1 | 1.2 | 1.4 | 1.5 | 1.7 | 1.9 | 2.1 |
| Communications | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 |
| Repair and personal care | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 2.9 | 3.0 | 3.2 | 3.6 |
| Recreation | 1.3 | 1.5 | 1.7 | 1.7 | 2.1 | 2.5 | 2.8 | 3.0 | 3.3 | 3.4 |
| Communal services | 15.5 | 15.9 | 16.5 | 17.2 | 18.3 | 19.4 | 20.0 | 20.7 | 21.6 | 22.5 |
| Education | 10.0 | 10.3 | 10.6 | 10.9 | 11.4 | 11.9 | 12.2 | 12.5 | 12.9 | 13.3 |
| Health | 5.5 | 5.6 | 5.9 | 6.3 | 6.9 | 7.5 | 7.8 | 8.2 | 8.7 | 9.2 |
| Investment | 26.8 | 32.3 | 32.0 | 36.9 | 39.9 | 47.6 | 52.9 | 58.9 | 64.4 | 71.6 |
| New fixed investment | 21.7 | 26.7 | 26.1 | 30.2 | 32.6 | 38.8 | 43.0 | 48.1 | 52.8 | 58.0 |
| Machinery and equipment | 3.5 | 3.5 | 3.8 | 3.9 | 4.8 | 5.8 | 7.3 | 8.1 | 9.1 | 9.8 |
| Construction and other | 18.1 | 20.8 | 23.2 | 25.4 | 28.0 | 30.6 | 32.1 | 35.0 | 39.4 | 44.4 |
| Net additions to livestock | 0.2 | 2.4 | −0.9 | 0.9 | −0.1 | 2.4 | 3.6 | 5.1 | 4.4 | 3.8 |
| Capital repair | 5.0 | 5.5 | 6.0 | 6.7 | 7.3 | 8.8 | 9.9 | 10.8 | 11.5 | 13.6 |
| Other government expenditures | 55.3 | 51.5 | 57.4 | 54.1 | 54.4 | 58.4 | 69.9 | 59.6 | 63.8 | 64.0 |
| Government administration | 12.9 | 12.9 | 13.0 | 12.6 | 12.4 | 10.9 | 10.7 | 10.2 | 10.3 | 10.0 |
| General agricultural programs | 1.3 | 1.4 | 1.5 | 1.6 | 2.2 | 1.7 | 1.7 | 1.7 | 1.8 | 1.9 |
| Forestry | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 |
| State administration | 5.9 | 5.8 | 5.7 | 5.5 | 4.9 | 4.3 | 4.2 | 3.9 | 3.9 | 3.7 |
| Culture | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Municipal services | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Civilian police | 3.4 | 3.3 | 3.3 | 3.2 | 2.8 | 2.5 | 2.4 | 2.3 | 2.2 | 2.1 |
| Research and development | 2.6 | 2.9 | 3.1 | 3.2 | 3.4 | 3.7 | 4.2 | 4.6 | 5.2 | 5.7 |
| Outlays not elsewhere classified | 39.8 | 35.7 | 41.3 | 38.2 | 38.6 | 43.9 | 55.1 | 44.8 | 48.3 | 48.3 |
| Gross national product | 184.3 | 185.3 | 197.4 | 206.0 | 216.0 | 234.4 | 257.0 | 262.4 | 282.3 | 296.1 |

## Table A-6 (continued)
## USSR: GNP by End Use at 1982 Factor Cost

*Billion 1982 rubles*

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 168.1 | 174.0 | 181.2 | 190.0 | 191.5 | 201.1 | 211.9 | 224.1 | 237.3 | 249.0 |
| Consumer goods | 111.9 | 114.6 | 118.4 | 123.9 | 121.9 | 127.8 | 135.1 | 143.9 | 153.2 | 161.4 |
| Food | 91.1 | 93.1 | 96.1 | 101.5 | 98.4 | 102.4 | 107.3 | 113.4 | 119.8 | 125.5 |
| Animal products | 48.9 | 49.8 | 50.9 | 56.2 | 50.8 | 53.0 | 57.3 | 61.1 | 65.4 | 69.5 |
| Processed foods | 5.9 | 6.2 | 6.6 | 6.8 | 7.5 | 7.8 | 7.9 | 8.4 | 8.7 | 9.2 |
| Basic foods | 27.9 | 28.1 | 28.8 | 28.1 | 29.4 | 30.2 | 30.1 | 31.0 | 32.0 | 31.6 |
| Beverages | 8.3 | 9.0 | 9.9 | 10.4 | 10.8 | 11.4 | 12.0 | 12.9 | 13.7 | 15.2 |
| Soft goods | 16.0 | 16.6 | 17.2 | 17.3 | 17.9 | 19.1 | 20.8 | 22.7 | 24.7 | 26.5 |
| Durables | 4.8 | 4.9 | 5.2 | 5.2 | 5.6 | 6.3 | 7.1 | 7.8 | 8.7 | 9.3 |
| Consumer services | 56.3 | 59.5 | 62.8 | 66.0 | 69.6 | 73.4 | 76.7 | 80.2 | 84.1 | 87.6 |
| Household services | 32.6 | 34.5 | 36.4 | 38.2 | 40.2 | 42.4 | 44.3 | 46.7 | 49.0 | 51.2 |
| Housing | 19.5 | 20.5 | 21.3 | 22.2 | 22.9 | 23.6 | 24.4 | 25.2 | 25.9 | 26.7 |
| Utilities | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.3 | 4.5 | 4.8 | 5.1 | 5.5 |
| Transportation | 2.4 | 2.6 | 3.0 | 3.3 | 3.5 | 3.9 | 4.3 | 4.8 | 5.2 | 5.6 |
| Communications | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 |
| Repair and personal care | 3.8 | 3.9 | 4.1 | 4.3 | 4.7 | 5.1 | 5.5 | 5.9 | 6.3 | 6.8 |
| Recreation | 3.6 | 3.8 | 3.9 | 3.9 | 4.2 | 4.5 | 4.5 | 4.8 | 5.1 | 5.2 |
| Communal services | 23.7 | 24.9 | 26.3 | 27.9 | 29.4 | 31.0 | 32.4 | 33.6 | 35.1 | 36.4 |
| Education | 14.0 | 14.8 | 16.0 | 17.2 | 18.3 | 19.4 | 20.3 | 21.1 | 22.1 | 22.9 |
| Health | 9.7 | 10.1 | 10.3 | 10.7 | 11.1 | 11.6 | 12.1 | 12.5 | 13.0 | 13.5 |
| Investment | 75.0 | 83.7 | 86.5 | 79.7 | 96.9 | 106.4 | 106.3 | 109.9 | 116.2 | 123.2 |
| New fixed investment | 60.6 | 67.9 | 69.4 | 60.3 | 76.1 | 84.6 | 84.0 | 87.2 | 92.4 | 98.7 |
| Machinery and equipment | 10.8 | 11.8 | 13.3 | 14.7 | 16.7 | 17.8 | 18.8 | 20.3 | 21.9 | 22.9 |
| Construction and other | 47.7 | 49.7 | 51.9 | 53.8 | 56.1 | 60.6 | 62.5 | 68.2 | 71.7 | 75.0 |
| Net additions to livestock | 2.0 | 6.5 | 4.3 | −8.1 | 3.4 | 6.2 | 2.7 | −1.3 | −1.2 | 0.8 |
| Capital repair | 14.4 | 15.7 | 17.1 | 19.3 | 20.9 | 21.8 | 22.3 | 22.7 | 23.8 | 24.5 |
| Other government expenditures | 62.6 | 65.4 | 64.1 | 54.5 | 77.9 | 79.5 | 87.5 | 89.8 | 95.6 | 83.4 |
| Government administration | 9.6 | 9.0 | 9.1 | 9.2 | 9.5 | 10.0 | 10.6 | 11.3 | 11.9 | 12.5 |
| **General agricultural programs** | 1.8 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.4 | 1.5 | 1.5 |
| Forestry | 0.8 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| State administration | 3.5 | 3.5 | 3.5 | 3.5 | 3.7 | 3.9 | 4.1 | 4.4 | 4.6 | 4.9 |
| Culture | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 | 1.4 | 1.5 |
| Municipal services | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 0.9 |
| Civilian police | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.3 | 2.4 | 2.5 | 2.7 | 2.8 |
| Research and development | 6.6 | 7.3 | 8.1 | 8.8 | 9.5 | 10.0 | 10.6 | 11.1 | 11.8 | 12.6 |
| **Outlays not elsewhere classified** | 46.4 | 49.2 | 46.8 | 36.6 | 58.8 | 59.4 | 66.3 | 67.3 | 71.8 | 58.2 |
| Gross national product | 305.7 | 323.1 | 331.8 | 324.2 | 366.4 | 387.0 | 405.7 | 423.8 | 449.0 | 455.6 |

## Table A-6 (continued)
## USSR: GNP by End Use at 1982 Factor Cost

*Billion 1982 rubles*

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 260.1 | 269.7 | 275.7 | 285.3 | 296.3 | 308.3 | 314.4 | 321.6 | 329.1 | 338.3 |
| Consumer goods | 168.8 | 175.1 | 178.0 | 184.7 | 191.8 | 199.9 | 203.0 | 208.1 | 212.2 | 218.1 |
| Food | 130.0 | 133.7 | 134.1 | 138.8 | 143.6 | 148.6 | 149.1 | 151.4 | 153.6 | 157.2 |
| Animal products | 71.1 | 72.5 | 73.4 | 76.5 | 79.7 | 83.1 | 83.0 | 83.4 | 85.0 | 87.4 |
| Processed foods | 9.6 | 9.8 | 9.9 | 10.6 | 10.9 | 10.9 | 11.4 | 11.8 | 12.2 | 12.4 |
| Basic foods | 33.2 | 34.4 | 33.0 | 34.3 | 34.1 | 34.2 | 33.6 | 34.7 | 35.4 | 35.3 |
| Beverages | 16.2 | 17.0 | 17.8 | 17.4 | 18.9 | 20.4 | 21.1 | 21.5 | 21.0 | 22.1 |
| Soft goods | 28.4 | 29.7 | 30.4 | 31.4 | 32.5 | 34.0 | 35.5 | 36.7 | 37.7 | 39.2 |
| Durables | 10.4 | 11.7 | 13.5 | 14.5 | 15.7 | 17.3 | 18.4 | 20.0 | 20.8 | 21.8 |
| Consumer services | 91.3 | 94.6 | 97.7 | 100.7 | 104.6 | 108.3 | 111.4 | 113.5 | 116.9 | 120.1 |
| Household services | 53.4 | 55.5 | 57.9 | 60.1 | 62.8 | 65.4 | 67.5 | 68.8 | 71.0 | 73.3 |
| Housing | 27.4 | 28.2 | 28.9 | 29.6 | 30.3 | 31.1 | 31.7 | 32.4 | 33.1 | 33.8 |
| Utilities | 5.8 | 6.2 | 6.6 | 7.1 | 7.5 | 7.9 | 8.4 | 8.7 | 9.1 | 9.5 |
| Transportation | 6.1 | 6.5 | 7.0 | 7.4 | 8.0 | 8.6 | 9.2 | 8.9 | 9.2 | 9.6 |
| Communications | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 |
| Repair and personal care | 7.3 | 7.6 | 8.1 | 8.5 | 9.0 | 9.4 | 9.9 | 10.3 | 10.8 | 11.4 |
| Recreation | 5.3 | 5.4 | 5.7 | 5.7 | 6.1 | 6.4 | 6.2 | 6.3 | 6.5 | 6.6 |
| Communal services | 37.9 | 39.0 | 39.7 | 40.6 | 41.8 | 42.9 | 43.9 | 44.7 | 45.8 | 46.8 |
| Education | 23.6 | 24.3 | 24.7 | 25.2 | 25.9 | 26.7 | 27.4 | 27.9 | 28.6 | 29.2 |
| Health | 14.3 | 14.7 | 15.1 | 15.4 | 15.8 | 16.2 | 16.6 | 16.8 | 17.3 | 17.6 |
| Investment | 138.9 | 144.1 | 149.1 | 160.5 | 168.7 | 169.5 | 178.0 | 184.2 | 187.3 | 186.9 |
| New fixed investment | 113.6 | 116.9 | 119.7 | 127.3 | 132.7 | 134.8 | 141.1 | 145.5 | 147.5 | 145.8 |
| Machinery and equipment | 25.8 | 27.1 | 29.4 | 31.6 | 34.7 | 39.2 | 43.0 | 45.4 | 49.2 | 51.0 |
| Construction and other | 81.8 | 86.4 | 90.3 | 93.0 | 95.1 | 97.8 | 97.3 | 96.4 | 96.3 | 93.7 |
| Net additions to livestock | 6.0 | 3.4 | 0.1 | 2.7 | 2.8 | −2.2 | 0.8 | 3.7 | 2.0 | 1.0 |
| Capital repair | 25.3 | 27.1 | 29.4 | 33.2 | 36.0 | 34.8 | 36.9 | 38.8 | 39.8 | 41.2 |
| Other government expenditures | 92.6 | 91.4 | 83.5 | 105.8 | 102.2 | 91.4 | 103.9 | 104.3 | 109.8 | 97.7 |
| Government administration | 12.9 | 13.4 | 13.9 | 14.3 | 14.9 | 15.4 | 15.9 | 16.3 | 16.8 | 17.2 |
| General agricultural programs | 1.5 | 1.6 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 |
| Forestry | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| State administration | 5.0 | 5.1 | 5.3 | 5.5 | 5.7 | 5.9 | 6.0 | 6.2 | 6.3 | 6.4 |
| Culture | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 |
| Municipal services | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.4 |
| Civilian police | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 3.6 | 3.7 |
| Research and development | 13.7 | 14.6 | 15.6 | 16.7 | 17.4 | 18.2 | 18.5 | 19.0 | 19.6 | 20.4 |
| Outlays not elsewhere classified | 66.1 | 63.4 | 54.0 | 74.8 | 69.9 | 57.7 | 69.6 | 69.0 | 73.4 | 60.1 |
| Gross national product | 491.6 | 505.1 | 508.3 | 551.7 | 567.2 | 569.1 | 596.4 | 610.2 | 626.2 | 623.0 |

## Table A-6 (continued)
## USSR: GNP by End Use at 1982 Factor Cost

*Billion 1982 rubles*

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Consumption | 348.2 | 354.8 | 357.5 | 365.7 | 376.9 | 385.1 | 391.6 | 402.2 |
| Consumer goods | 224.7 | 228.6 | 227.8 | 233.0 | 240.6 | 245.2 | 248.3 | 253.9 |
| Food | 160.5 | 161.5 | 161.5 | 165.4 | 170.2 | 171.3 | 169.7 | 172.6 |
| Animal products | 88.8 | 88.8 | 87.7 | 90.3 | 93.7 | 97.2 | 99.3 | 103.0 |
| Processed foods | 13.0 | 13.3 | 13.5 | 13.7 | 13.8 | 13.8 | 14.3 | 15.2 |
| Basic foods | 35.6 | 36.2 | 37.6 | 38.3 | 39.0 | 39.4 | 41.5 | 41.3 |
| Beverages | 23.1 | 23.3 | 22.6 | 23.2 | 23.7 | 21.0 | 14.6 | 13.1 |
| Soft goods | 40.8 | 42.0 | 41.7 | 42.3 | 43.7 | 45.5 | 47.0 | 47.6 |
| Durables | 23.4 | 25.1 | 24.7 | 25.3 | 26.7 | 28.3 | 31.6 | 33.7 |
| Consumer services | 123.5 | 126.2 | 129.6 | 132.7 | 136.3 | 139.9 | 143.3 | 148.3 |
| Household services | 75.9 | 78.1 | 80.2 | 82.7 | 85.2 | 87.8 | 90.5 | 93.9 |
| Housing | 34.4 | 35.2 | 36.2 | 37.2 | 38.1 | 39.1 | 40.1 | 41.3 |
| Utilities | 9.9 | 10.3 | 10.7 | 11.1 | 11.7 | 12.2 | 12.7 | 13.2 |
| Transportation | 10.1 | 10.5 | 10.7 | 10.9 | 11.2 | 11.5 | 11.9 | 12.1 |
| Communications | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.1 | 3.2 | 3.5 |
| Repair and personal care | 12.0 | 12.5 | 12.8 | 13.4 | 13.9 | 14.5 | 15.1 | 16.2 |
| Recreation | 6.9 | 7.1 | 7.1 | 7.2 | 7.3 | 7.5 | 7.5 | 7.6 |
| Communal services | 47.6 | 48.0 | 49.4 | 50.0 | 51.1 | 52.1 | 52.8 | 54.4 |
| Education | 29.9 | 30.2 | 31.1 | 31.4 | 32.0 | 32.7 | 33.4 | 34.1 |
| Health | 17.7 | 17.9 | 18.3 | 18.6 | 19.0 | 19.4 | 19.4 | 20.2 |
| Investment | 188.4 | 193.8 | 196.7 | 205.8 | 208.0 | 214.6 | 226.1 | 228.9 |
| New fixed investment | 146.3 | 150.8 | 153.7 | 161.2 | 163.1 | 167.9 | 178.9 | 180.0 |
| Machinery and equipment | 53.6 | 56.4 | 59.0 | 63.0 | 63.9 | 67.3 | 71.9 | 72.9 |
| Construction and other | 92.6 | 93.6 | 92.9 | 95.8 | 98.5 | 100.7 | 105.7 | 108.7 |
| Net additions to livestock | 0.0 | 0.8 | 1.8 | 2.4 | 0.8 | −0.1 | 1.3 | −1.6 |
| Capital repair | 42.1 | 43.1 | 43.0 | 44.6 | 44.9 | 46.7 | 47.2 | 48.9 |
| Other government expenditures | 88.1 | 82.0 | 92.6 | 95.8 | 92.0 | 83.2 | 92.6 | 88.8 |
| Government administration | 17.8 | 18.2 | 18.5 | 18.7 | 19.0 | 19.2 | 19.5 | 19.8 |
| General agricultural programs | 2.4 | 2.5 | 2.7 | 2.7 | 2.8 | 2.9 | 2.8 | 2.8 |
| Forestry | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| State administration | 6.6 | 6.8 | 6.9 | 6.9 | 7.0 | 7.1 | 7.2 | 7.4 |
| Culture | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.8 |
| Municipal services | 1.4 | 1.4 | 1.4 | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 |
| Civilian police | 3.8 | 3.9 | 4.0 | 4.0 | 4.1 | 4.1 | 4.2 | 4.3 |
| Research and development | 21.6 | 22.2 | 21.7 | 22.3 | 22.9 | 23.3 | 23.6 | 24.3 |
| Outlays not elsewhere classified | 48.8 | 41.5 | 52.3 | 54.8 | 50.1 | 40.8 | 49.5 | 44.7 |
| Gross national product | 624.7 | 630.6 | 646.7 | 667.3 | 676.9 | 682.9 | 710.3 | 719.9 |

**Table A-7** *Percent*

## USSR: Average Annual Growth of GNP by End Use

| | 1951-55 | 1956-60 | 1961-65 | 1966-70 | 1971-75 | 1976-80 | 1981-85 | 1986-87 |
|---|---|---|---|---|---|---|---|---|
| Consumption | 4.7 | 5.5 | 3.7 | 5.3 | 3.5 | 2.5 | 2.0 | 2.2 |
| Consumer goods | 4.7 | 5.8 | 2.7 | 5.7 | 3.4 | 2.4 | 1.8 | 1.8 |
| Food | 3.6 | 5.3 | 2.4 | 4.9 | 2.7 | 1.5 | 1.3 | 0.4 |
| Animal products | 3.1 | 8.2 | 1.6 | 6.0 | 3.2 | 1.3 | 1.8 | 2.9 |
| Processed foods | 12.1 | 5.8 | 5.8 | 4.2 | 2.7 | 3.5 | 1.2 | 5.0 |
| Basic foods | 1.6 | 1.2 | 1.6 | 1.9 | 0.6 | 0.8 | 2.0 | 2.5 |
| Beverages | 12.5 | 4.6 | 6.4 | 7.3 | 4.7 | 2.6 | −1.9 | −21.1 |
| Soft goods | 10.1 | 7.5 | 3.7 | 8.3 | 3.7 | 3.7 | 2.2 | 2.3 |
| Durables | 19.6 | 12.3 | 5.5 | 10.6 | 10.7 | 6.3 | 3.9 | 9.0 |
| Consumer services | 4.5 | 5.0 | 5.5 | 4.5 | 3.5 | 2.7 | 2.5 | 3.0 |
| Household services | 4.5 | 5.7 | 5.4 | 4.7 | 4.2 | 3.0 | 3.0 | 3.4 |
| Housing | 2.7 | 4.8 | 3.9 | 3.0 | 2.5 | 2.1 | 2.6 | 2.8 |
| Utilities | 5.9 | 6.6 | 9.4 | 6.5 | 6.3 | 4.7 | 4.2 | 4.1 |
| Transportation | 12.3 | 11.2 | 10.6 | 9.3 | 7.3 | 3.2 | 2.6 | 2.7 |
| Communications | 8.6 | 7.3 | 7.3 | 8.6 | 6.4 | 4.7 | 3.9 | 6.2 |
| Repair and personal care | 3.9 | 5.3 | 6.4 | 7.3 | 5.3 | 4.9 | 4.0 | 5.6 |
| Recreation | 14.1 | 7.2 | 4.8 | 3.2 | 3.9 | 1.6 | 1.5 | 0.8 |
| Communal services | 4.6 | 4.1 | 5.5 | 4.1 | 2.5 | 2.1 | 1.8 | 2.2 |
| Education | 3.5 | 3.3 | 6.8 | 4.0 | 2.5 | 2.3 | 1.8 | 2.2 |
| Health | 6.3 | 5.3 | 3.7 | 4.3 | 2.5 | 1.8 | 1.8 | 2.2 |
| Investment | 12.2 | 9.5 | 7.2 | 5.5 | 4.1 | 2.1 | 2.6 | 3.3 |
| New fixed investment | 12.3 | 9.3 | 6.9 | 6.1 | 3.5 | 1.7 | 2.8 | 3.5 |
| Machinery and equipment | 10.7 | 13.3 | 10.5 | 7.6 | 8.7 | 6.5 | 4.6 | 4.1 |
| Construction and other | 11.1 | 9.3 | 4.9 | 6.2 | 3.6 | −1.1 | 1.7 | 3.9 |
| Capital repair | 11.9 | 10.4 | 8.6 | 3.1 | 6.5 | 3.9 | 2.1 | 2.4 |
| Other government expenditures | 1.1 | 1.4 | 4.9 | 3.1 | −0.3 | −0.7 | −1.1 | 3.3 |
| Government administration | −3.4 | −2.4 | 0.9 | 5.1 | 3.7 | 2.9 | 1.5 | 1.6 |
| General agricultural programs | 5.5 | 1.7 | −8.3 | 4.8 | 4.8 | 5.5 | 3.4 | −1.3 |
| Forestry | −2.8 | −4.0 | 1.3 | 1.7 | 0.9 | −0.0 | −0.2 | −1.3 |
| State administration | −6.0 | −4.1 | 2.2 | 4.9 | 3.5 | 2.4 | 1.2 | 2.3 |
| Culture | 3.5 | 1.6 | 5.5 | 8.4 | 5.0 | 3.8 | 1.3 | 2.9 |
| Municipal services | 2.7 | 1.4 | 3.4 | 5.3 | 4.5 | 3.2 | 1.6 | 1.7 |
| Civilian police | −6.0 | −4.1 | 2.2 | 4.9 | 3.5 | 2.4 | 1.2 | 2.3 |
| Research and development | 7.2 | 12.1 | 8.8 | 6.5 | 5.9 | 3.4 | 1.5 | 2.3 |
| Outlays not elsewhere classified | 2.0 | 1.1 | 5.1 | 2.1 | −2.7 | −3.3 | −3.5 | 4.7 |
| Gross national product | 4.9 | 5.5 | 4.8 | 4.9 | 3.0 | 1.9 | 1.8 | 2.7 |

## Table A-8
## USSR: Annual Growth of GNP by End Use

*Percent*

| | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|
| Consumption | −0.6 | 6.3 | 6.6 | 5.8 | 5.5 | 4.6 | 7.2 | 7.2 | 4.1 |
| Consumer goods | −2.7 | 7.5 | 8.0 | 5.9 | 5.3 | 5.0 | 8.6 | 8.0 | 3.4 |
| Food | −5.0 | 7.6 | 7.1 | 3.9 | 5.1 | 4.3 | 8.4 | 8.0 | 2.5 |
| Animal products | 1.1 | 1.9 | 5.0 | 4.8 | 2.6 | 8.3 | 10.3 | 13.9 | 4.0 |
| Processed foods | 32.0 | 10.8 | 19.9 | −17.9 | 23.2 | −9.4 | 3.2 | 4.6 | 4.9 |
| Basic foods | −18.4 | 14.5 | 6.0 | 5.3 | 3.9 | −1.8 | 5.9 | 0.9 | 0.7 |
| Beverages | 12.3 | 11.4 | 16.3 | 10.4 | 12.2 | 4.5 | 11.3 | 4.9 | −1.4 |
| Soft goods | 13.4 | 5.6 | 10.2 | 15.6 | 5.8 | 8.3 | 6.7 | 8.0 | 7.4 |
| Durables | 16.8 | 14.9 | 31.2 | 27.7 | 8.8 | 9.5 | 20.9 | 9.7 | 9.2 |
| Consumer services | 3.4 | 4.1 | 3.9 | 5.4 | 5.9 | 3.8 | 4.4 | 5.4 | 5.7 |
| Household services | 4.2 | 4.2 | 3.6 | 4.8 | 5.8 | 4.3 | 5.0 | 6.5 | 6.8 |
| Housing | 2.5 | 2.6 | 2.5 | 2.7 | 3.0 | 3.3 | 4.2 | 5.1 | 5.8 |
| Utilities | 6.2 | 6.5 | 5.7 | 5.3 | 5.6 | 5.7 | 5.2 | 7.5 | 7.7 |
| Transportation | 11.5 | 10.3 | 12.1 | 12.1 | 15.9 | 7.6 | 14.8 | 11.8 | 10.0 |
| Communications | 10.3 | 9.4 | 6.6 | 8.8 | 7.8 | 8.3 | 7.7 | 5.9 | 6.7 |
| Repair and personal care | 3.3 | 3.8 | 4.3 | 3.9 | 4.0 | 0.3 | 1.7 | 7.1 | 13.2 |
| Recreation | 15.0 | 12.4 | 4.2 | 17.3 | 22.3 | 10.9 | 7.7 | 9.9 | 3.9 |
| Communal services | 2.5 | 3.9 | 4.3 | 6.2 | 5.9 | 3.2 | 3.7 | 4.1 | 4.1 |
| Education | 2.6 | 3.3 | 2.9 | 4.5 | 4.4 | 2.8 | 2.6 | 3.1 | 3.0 |
| Health | 2.4 | 4.9 | 6.9 | 9.2 | 8.4 | 3.9 | 5.4 | 5.6 | 5.7 |
| Investment | 20.6 | −0.7 | 15.1 | 8.3 | 19.3 | 11.0 | 11.4 | 9.2 | 11.2 |
| New fixed investment | 23.0 | −2.4 | 15.9 | 7.9 | 19.1 | 10.7 | 11.8 | 9.9 | 9.8 |
| Machinery and equipment | 1.2 | 7.3 | 3.6 | 21.3 | 22.1 | 25.3 | 10.5 | 12.5 | 8.4 |
| Construction and other | 15.2 | 11.6 | 9.1 | 10.3 | 9.5 | 4.9 | 8.8 | 12.6 | 12.8 |
| Capital repair | 10.2 | 7.6 | 11.9 | 9.9 | 20.3 | 12.3 | 9.7 | 6.4 | 17.5 |
| Other government expenditures | −7.0 | 11.5 | −5.8 | 0.6 | 7.4 | 19.6 | −14.7 | 7.0 | 0.4 |
| Government administration | 0.4 | 0.3 | −2.6 | −2.2 | −12.2 | −1.8 | −4.4 | 0.7 | −2.4 |
| General agricultural programs | 9.7 | 8.9 | 5.4 | 40.1 | −26.0 | 4.3 | −2.6 | 7.0 | 3.6 |
| Forestry | 1.7 | 1.7 | −10.1 | −3.5 | −3.4 | −2.2 | −5.6 | −3.3 | −6.7 |
| State administration | −1.5 | −1.5 | −3.5 | −10.7 | −12.0 | −3.8 | −5.8 | −0.7 | −4.3 |
| Culture | 3.4 | 3.2 | 2.5 | 4.5 | 4.0 | 1.0 | 1.5 | 2.5 | 1.3 |
| Municipal services | 3.9 | 3.7 | 2.1 | 2.0 | 1.9 | 2.6 | 0.9 | 1.2 | 0.7 |
| Civilian police | −1.5 | −1.5 | −3.5 | −10.7 | −12.0 | −3.8 | −5.8 | −0.7 | −4.3 |
| Research and development | 9.4 | 7.9 | 4.6 | 5.5 | 8.5 | 12.4 | 10.2 | 13.0 | 10.6 |
| Outlays not elsewhere classified | −10.5 | 15.9 | −7.5 | 1.1 | 13.6 | 25.5 | −18.6 | 7.8 | −0.1 |
| Gross national product | 0.6 | 6.5 | 4.4 | 4.9 | 8.5 | 9.6 | 2.1 | 7.6 | 4.9 |

## Table A-8 (continued)
## USSR: Annual Growth of GNP by End Use

*Percent*

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 4.7 | 3.5 | 4.1 | 4.9 | 0.8 | 5.0 | 5.3 | 5.8 | 5.9 | 5.0 |
| Consumer goods | 4.3 | 2.4 | 3.3 | 4.7 | −1.6 | 4.8 | 5.8 | 6.5 | 6.5 | 5.4 |
| Food | 3.4 | 2.2 | 3.2 | 5.7 | −3.1 | 4.0 | 4.8 | 5.7 | 5.6 | 4.8 |
| Animal products | 4.7 | 1.8 | 2.1 | 10.5 | −9.6 | 4.4 | 8.0 | 6.8 | 7.0 | 6.2 |
| Processed foods | 7.2 | 4.6 | 6.5 | 4.4 | 9.2 | 4.4 | 1.3 | 5.8 | 4.4 | 5.4 |
| Basic foods | 0.2 | 0.8 | 2.2 | −2.3 | 4.5 | 2.8 | −0.4 | 3.0 | 3.4 | −1.2 |
| Beverages | 4.3 | 7.9 | 10.2 | 4.9 | 3.9 | 5.4 | 5.7 | 7.7 | 5.6 | 11.6 |
| Soft goods | 7.2 | 3.7 | 3.6 | 0.5 | 3.5 | 7.0 | 8.9 | 8.9 | 8.9 | 7.5 |
| Durables | 12.9 | 1.8 | 5.5 | −0.2 | 9.5 | 11.4 | 12.5 | 10.5 | 11.3 | 7.1 |
| Consumer services | 5.7 | 5.7 | 5.6 | 5.2 | 5.4 | 5.4 | 4.6 | 4.6 | 4.8 | 4.2 |
| Household services | 6.0 | 6.0 | 5.5 | 4.7 | 5.3 | 5.4 | 4.6 | 5.3 | 5.0 | 4.5 |
| Housing | 5.7 | 4.9 | 4.3 | 3.8 | 3.4 | 3.1 | 3.2 | 3.2 | 3.1 | 2.9 |
| Utilities | 6.9 | 9.9 | 10.1 | 9.6 | 9.2 | 8.5 | 6.7 | 5.9 | 6.8 | 6.8 |
| Transportation | 12.1 | 10.8 | 13.7 | 10.9 | 8.1 | 9.5 | 11.1 | 10.0 | 9.9 | 7.9 |
| Communications | 7.7 | 6.0 | 6.2 | 6.4 | 7.9 | 10.2 | 10.7 | 10.3 | 6.9 | 8.3 |
| Repair and personal care | 5.0 | 4.8 | 4.9 | 5.1 | 7.8 | 9.3 | 6.9 | 7.8 | 7.4 | 7.8 |
| Recreation | 3.8 | 7.1 | 3.2 | 0.3 | 7.2 | 6.2 | 0.3 | 7.3 | 5.4 | 1.3 |
| Communal services | 5.3 | 5.3 | 5.6 | 5.9 | 5.6 | 5.3 | 4.6 | 3.6 | 4.5 | 3.9 |
| Education | 4.9 | 6.2 | 8.2 | 6.9 | 6.8 | 5.8 | 4.9 | 3.9 | 4.6 | 3.9 |
| Health | 5.9 | 4.0 | 2.0 | 4.3 | 3.7 | 4.6 | 4.0 | 3.0 | 4.3 | 3.9 |
| Investment | 4.8 | 11.6 | 3.5 | −7.9 | 21.7 | 9.7 | −0.1 | 3.4 | 5.7 | 6.1 |
| New fixed investment | 4.4 | 12.1 | 2.3 | −13.1 | 26.1 | 11.2 | −0.8 | 3.9 | 5.9 | 6.9 |
| Machinery and equipment | 10.4 | 8.6 | 12.9 | 10.7 | 13.1 | 7.1 | 5.6 | 7.6 | 8.0 | 4.7 |
| Construction and other | 7.4 | 4.1 | 4.5 | 3.6 | 4.3 | 8.0 | 3.1 | 9.2 | 5.0 | 4.7 |
| Capital repair | 6.3 | 9.2 | 8.6 | 13.0 | 7.9 | 4.4 | 2.5 | 1.8 | 4.8 | 3.0 |
| Other government expenditures | −2.2 | 4.5 | −2.1 | −14.9 | 42.9 | 2.0 | 10.1 | 2.5 | 6.5 | −12.7 |
| Government administration | −4.0 | −6.9 | 1.9 | 0.4 | 4.1 | 5.3 | 5.4 | 6.9 | 5.6 | 4.9 |
| General agricultural programs | −3.6 | −37.4 | −1.6 | −1.4 | 3.7 | 2.9 | 5.9 | 9.4 | 7.5 | 1.5 |
| Forestry | −1.9 | 0.7 | 2.9 | 2.3 | 1.8 | −1.3 | 2.2 | 1.0 | 2.4 | 1.4 |
| State administration | −5.9 | −0.5 | 1.6 | −0.8 | 4.0 | 7.0 | 5.9 | 6.6 | 4.9 | 5.4 |
| Culture | 1.7 | 3.2 | 6.4 | 5.4 | 6.8 | 5.6 | 4.8 | 10.0 | 10.1 | 8.8 |
| Municipal services | 1.8 | 1.1 | 3.3 | 3.9 | 5.1 | 3.7 | 4.8 | 7.7 | 4.9 | 4.9 |
| Civilian police | −5.9 | −0.5 | 1.6 | −0.8 | 4.0 | 7.0 | 5.9 | 6.6 | 4.9 | 5.4 |
| Research and development | 14.3 | 11.5 | 11.0 | 7.8 | 8.5 | 5.2 | 6.5 | 4.2 | 6.7 | 6.7 |
| Outlays not elsewhere classified | −3.8 | 5.9 | −4.8 | −21.8 | 60.8 | 1.0 | 11.6 | 1.6 | 6.6 | −18.9 |
| Gross national product | 3.2 | 5.7 | 2.7 | −2.3 | 13.0 | 5.6 | 4.8 | 4.5 | 5.9 | 1.5 |

## Table A-8 (continued)
## USSR: Annual Growth of GNP by End Use

*Percent*

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 4.5 | 3.7 | 2.2 | 3.5 | 3.8 | 4.0 | 2.0 | 2.3 | 2.3 | 2.8 |
| Consumer goods | 4.6 | 3.7 | 1.7 | 3.8 | 3.8 | 4.3 | 1.5 | 2.5 | 2.0 | 2.8 |
| Food | 3.6 | 2.8 | 0.3 | 3.5 | 3.5 | 3.5 | 0.3 | 1.5 | 1.5 | 2.3 |
| Animal products | 2.3 | 2.1 | 1.2 | 4.2 | 4.2 | 4.2 | −0.2 | 0.5 | 1.9 | 2.8 |
| Processed foods | 4.1 | 2.2 | 1.6 | 6.3 | 2.8 | 0.7 | 4.3 | 3.7 | 3.5 | 1.1 |
| Basic foods | 5.0 | 3.6 | −4.1 | 4.1 | −0.8 | 0.5 | −1.8 | 3.1 | 2.2 | −0.4 |
| Beverages | 6.4 | 4.7 | 5.0 | −2.4 | 8.8 | 7.5 | 3.6 | 1.9 | −2.2 | 5.3 |
| Soft goods | 7.1 | 4.4 | 2.5 | 3.1 | 3.5 | 4.9 | 4.4 | 3.3 | 2.8 | 3.9 |
| Durables | 11.6 | 13.0 | 14.7 | 8.1 | 8.2 | 9.7 | 6.4 | 8.8 | 4.2 | 4.5 |
| Consumer services | 4.2 | 3.6 | 3.3 | 3.1 | 3.9 | 3.6 | 2.9 | 1.9 | 2.9 | 2.8 |
| Household services | 4.2 | 4.1 | 4.3 | 3.8 | 4.4 | 4.2 | 3.2 | 2.0 | 3.2 | 3.3 |
| Housing | 2.8 | 2.6 | 2.6 | 2.5 | 2.4 | 2.4 | 2.2 | 2.1 | 2.1 | 2.0 |
| Utilities | 6.3 | 6.7 | 6.6 | 6.2 | 6.1 | 5.8 | 6.0 | 3.9 | 4.8 | 4.1 |
| Transportation | 7.7 | 7.3 | 7.5 | 5.9 | 8.1 | 7.9 | 6.2 | −3.1 | 3.3 | 5.0 |
| Communications | 7.1 | 6.7 | 6.7 | 6.2 | 6.1 | 6.2 | 5.2 | 4.5 | 4.3 | 4.8 |
| Repair and personal care | 6.4 | 5.1 | 5.5 | 5.6 | 5.3 | 5.0 | 4.8 | 4.0 | 5.6 | 5.0 |
| Recreation | 2.1 | 3.1 | 4.3 | 1.4 | 6.2 | 4.7 | −2.9 | 1.9 | 2.1 | 2.8 |
| Communal services | 4.0 | 2.9 | 1.9 | 2.1 | 3.0 | 2.7 | 2.4 | 1.8 | 2.5 | 2.1 |
| Education | 2.9 | 3.0 | 1.5 | 2.0 | 3.0 | 2.8 | 2.7 | 2.0 | 2.3 | 2.2 |
| Health | 6.0 | 2.6 | 2.4 | 2.2 | 3.0 | 2.4 | 2.0 | 1.5 | 2.8 | 1.9 |
| Investment | 12.7 | 3.7 | 3.5 | 7.7 | 5.1 | 0.5 | 5.0 | 3.5 | 1.7 | −0.2 |
| New fixed investment | 15.0 | 2.9 | 2.4 | 6.3 | 4.3 | 1.5 | 4.7 | 3.1 | 1.4 | −1.2 |
| Machinery and equipment | 12.4 | 5.3 | 8.2 | 7.6 | 10.0 | 12.8 | 9.7 | 5.7 | 8.4 | 3.6 |
| Construction and other | 9.1 | 5.6 | 4.4 | 3.0 | 2.3 | 2.8 | −0.6 | −0.9 | −0.0 | −2.7 |
| Capital repair | 3.4 | 7.1 | 8.2 | 13.2 | 8.2 | −3.3 | 6.2 | 5.0 | 2.6 | 3.4 |
| Other government expenditures | 11.0 | −1.3 | −8.6 | 26.6 | −3.3 | −10.6 | 13.8 | 0.3 | 5.2 | −11.0 |
| Government administration | 2.5 | 4.1 | 3.8 | 3.3 | 4.1 | 3.4 | 3.0 | 2.7 | 2.9 | 2.4 |
| General agricultural programs | −0.0 | 6.7 | 4.5 | 4.0 | 4.1 | 4.2 | 9.0 | 2.3 | 6.2 | 3.9 |
| Forestry | 1.4 | 0.4 | 2.3 | −0.5 | 1.4 | 0.7 | −0.9 | 0.4 | 0.9 | −0.2 |
| State administration | 1.9 | 3.3 | 3.6 | 3.2 | 4.2 | 3.3 | 2.1 | 2.2 | 2.1 | 2.4 |
| Culture | 8.3 | 6.9 | 4.2 | 4.7 | 5.4 | 4.0 | 3.8 | 5.6 | 3.7 | 1.9 |
| Municipal services | 3.9 | 5.9 | 4.9 | 3.7 | 4.2 | 3.7 | 2.3 | 3.6 | 3.8 | 3.0 |
| Civilian police | 1.9 | 3.3 | 3.6 | 3.2 | 4.2 | 3.3 | 2.1 | 2.2 | 2.1 | 2.4 |
| Research and development | 8.2 | 6.5 | 7.2 | 6.7 | 4.3 | 4.9 | 1.4 | 2.6 | 3.2 | 4.2 |
| Outlays not elsewhere classified | 13.5 | −4.0 | −14.8 | 38.4 | −6.5 | −17.5 | 20.5 | −0.8 | 6.4 | −18.1 |
| Gross national product | 7.9 | 2.7 | 0.6 | 8.5 | 2.8 | 0.3 | 4.8 | 2.3 | 2.6 | −0.5 |

## Table A-8 (continued)
## USSR: Annual Growth of GNP by End Use

*Percent*

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Consumption | 2.9 | 1.9 | 0.8 | 2.3 | 3.1 | 2.2 | 1.7 | 2.7 |
| Consumer goods | 3.0 | 1.7 | −0.3 | 2.3 | 3.3 | 1.9 | 1.3 | 2.3 |
| Food | 2.1 | 0.6 | −0.0 | 2.4 | 2.9 | 0.7 | −0.9 | 1.7 |
| Animal products | 1.6 | −0.0 | −1.2 | 2.9 | 3.8 | 3.7 | 2.2 | 3.7 |
| Processed foods | 4.8 | 2.3 | 1.7 | 1.2 | 1.0 | −0.3 | 4.2 | 5.8 |
| Basic foods | 0.8 | 1.7 | 4.0 | 1.8 | 1.7 | 0.9 | 5.4 | −0.3 |
| Beverages | 4.5 | 0.8 | −2.9 | 2.4 | 2.2 | −11.4 | −30.6 | −10.3 |
| Soft goods | 4.1 | 2.9 | −0.7 | 1.5 | 3.4 | 4.1 | 3.2 | 1.3 |
| Durables | 7.5 | 7.1 | −1.7 | 2.6 | 5.5 | 6.1 | 11.6 | 6.5 |
| Consumer services | 2.8 | 2.2 | 2.8 | 2.3 | 2.7 | 2.6 | 2.5 | 3.4 |
| Household services | 3.5 | 3.0 | 2.7 | 3.0 | 3.1 | 3.1 | 3.1 | 3.7 |
| Housing | 1.9 | 2.3 | 2.8 | 2.8 | 2.5 | 2.4 | 2.7 | 2.9 |
| Utilities | 4.5 | 3.6 | 3.9 | 4.2 | 5.1 | 4.2 | 4.0 | 4.2 |
| Transportation | 4.8 | 3.6 | 1.9 | 2.3 | 2.5 | 2.6 | 3.2 | 2.3 |
| Communications | 4.7 | 4.3 | 2.2 | 3.5 | 4.7 | 4.7 | 5.5 | 6.8 |
| Repair and personal care | 5.2 | 4.2 | 2.9 | 4.4 | 4.0 | 4.4 | 4.1 | 7.2 |
| Recreation | 4.3 | 2.2 | 1.1 | 0.8 | 1.4 | 2.1 | 0.4 | 1.3 |
| Communal services | 1.7 | 0.9 | 2.9 | 1.3 | 2.1 | 1.9 | 1.4 | 2.9 |
| Education | 2.3 | 0.9 | 3.3 | 0.9 | 2.0 | 2.1 | 2.0 | 2.3 |
| Health | 0.6 | 0.9 | 2.2 | 1.9 | 2.3 | 1.7 | 0.4 | 4.0 |
| Investment | 0.8 | 2.9 | 1.5 | 4.7 | 1.1 | 3.2 | 5.4 | 1.2 |
| New fixed investment | 0.4 | 3.1 | 2.0 | 4.9 | 1.2 | 2.9 | 6.6 | 0.6 |
| Machinery and equipment | 5.2 | 5.1 | 4.7 | 6.8 | 1.3 | 5.3 | 6.9 | 1.3 |
| Construction and other | −1.2 | 1.0 | −0.8 | 3.2 | 2.8 | 2.3 | 4.9 | 2.9 |
| Capital repair | 2.2 | 2.3 | −0.2 | 3.8 | 0.7 | 4.1 | 1.2 | 3.6 |
| Other government expenditures | −9.8 | −6.9 | 12.9 | 3.5 | −4.0 | −9.5 | 11.2 | −4.1 |
| Government administration | 3.5 | 2.4 | 1.6 | 1.1 | 1.5 | 0.9 | 1.5 | 1.7 |
| General agricultural programs | 6.0 | 4.6 | 4.3 | 2.0 | 3.9 | 3.3 | −2.8 | 0.2 |
| Forestry | −0.3 | −0.0 | −0.2 | −0.2 | −0.3 | −0.2 | −0.4 | −2.2 |
| State administration | 3.2 | 2.2 | 1.1 | 1.2 | 1.4 | 0.2 | 2.6 | 2.0 |
| Culture | 4.1 | 3.1 | 1.9 | −0.1 | 1.0 | 0.8 | 2.2 | 3.6 |
| Municipal services | 3.4 | 1.1 | 0.6 | 1.6 | 2.1 | 2.3 | 2.1 | 1.2 |
| Civilian police | 3.2 | 2.2 | 1.1 | 1.2 | 1.4 | 0.2 | 2.6 | 2.0 |
| Research and development | 5.6 | 3.1 | −2.3 | 2.4 | 2.8 | 1.7 | 1.3 | 3.3 |
| Outlays not elsewhere classified | −18.9 | −14.8 | 25.9 | 4.8 | −8.6 | −18.7 | 21.5 | −9.8 |
| Gross national product | 0.3 | 0.9 | 2.6 | 3.2 | 1.4 | 0.9 | 4.0 | 1.3 |

## Table A-9
## USSR: Indexes of GNP by End Use

*1982=100*

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 28.6 | 28.4 | 30.2 | 32.2 | 34.0 | 35.9 | 37.5 | 40.2 | 43.1 | 44.9 |
| Consumer goods | 29.4 | 28.6 | 30.7 | 33.2 | 35.1 | 37.0 | 38.8 | 42.2 | 45.6 | 47.1 |
| Food | 36.5 | 34.7 | 37.3 | 40.0 | 41.5 | 43.6 | 45.5 | 49.3 | 53.2 | 54.6 |
| Animal products | 32.4 | 32.8 | 33.4 | 35.0 | 36.7 | 37.7 | 40.8 | 45.0 | 51.3 | 53.3 |
| Processed foods | 18.5 | 24.5 | 27.1 | 32.5 | 26.7 | 32.9 | 35.9 | 37.1 | 38.8 | 40.7 |
| Basic foods | 64.6 | 52.7 | 60.3 | 63.9 | 67.4 | 70.0 | 68.8 | 72.9 | 73.5 | 74.1 |
| Beverages | 16.3 | 18.3 | 20.4 | 23.7 | 26.1 | 29.3 | 30.6 | 34.1 | 35.8 | 35.3 |
| Soft goods | 16.5 | 18.7 | 19.8 | 21.8 | 25.2 | 26.6 | 28.9 | 30.8 | 33.3 | 35.8 |
| Durables | 4.5 | 5.2 | 6.0 | 7.9 | 10.0 | 10.9 | 11.9 | 14.4 | 15.8 | 17.3 |
| Consumer services | 27.2 | 28.2 | 29.3 | 30.5 | 32.1 | 34.0 | 35.3 | 36.8 | 38.9 | 41.1 |
| Household services | 24.7 | 25.7 | 26.8 | 27.7 | 29.1 | 30.7 | 32.1 | 33.7 | 35.9 | 38.3 |
| Housing | 37.4 | 38.3 | 39.3 | 40.3 | 41.4 | 42.6 | 44.1 | 45.9 | 48.3 | 51.0 |
| Utilities | 13.9 | 14.7 | 15.7 | 16.6 | 17.5 | 18.4 | 19.5 | 20.5 | 22.0 | 23.7 |
| Transportation | 7.2 | 8.1 | 8.9 | 10.0 | 11.2 | 12.9 | 13.9 | 16.0 | 17.9 | 19.6 |
| Communications | 11.8 | 13.0 | 14.3 | 15.2 | 16.6 | 17.9 | 19.4 | 20.8 | 22.1 | 23.6 |
| Repair and personal care | 18.7 | 19.3 | 20.0 | 20.9 | 21.7 | 22.6 | 22.7 | 23.0 | 24.7 | 27.9 |
| Recreation | 18.2 | 20.9 | 23.5 | 24.5 | 28.7 | 35.1 | 39.0 | 42.0 | 46.1 | 47.9 |
| Communal services | 31.4 | 32.2 | 33.4 | 34.9 | 37.0 | 39.2 | 40.5 | 42.0 | 43.7 | 45.5 |
| Education | 32.1 | 33.0 | 34.0 | 35.0 | 36.6 | 38.2 | 39.3 | 40.3 | 41.5 | 42.8 |
| Health | 30.2 | 30.9 | 32.4 | 34.6 | 37.8 | 41.0 | 42.6 | 44.9 | 47.4 | 50.1 |
| Investment | 13.6 | 16.4 | 16.3 | 18.8 | 20.3 | 24.2 | 26.9 | 30.0 | 32.7 | 36.4 |
| New fixed investment | 14.1 | 17.4 | 17.0 | 19.7 | 21.2 | 25.3 | 28.0 | 31.3 | 34.4 | 37.7 |
| Machinery and equipment | 5.9 | 6.0 | 6.4 | 6.7 | 8.1 | 9.9 | 12.4 | 13.6 | 15.4 | 16.6 |
| Construction and other | 19.5 | 22.4 | 25.0 | 27.3 | 30.1 | 33.0 | 34.6 | 37.6 | 42.4 | 47.8 |
| Net additions to livestock | 8.9 | 130.2 | −51.5 | 52.0 | −5.7 | 132.6 | 198.2 | 279.2 | 241.8 | 208.3 |
| Capital repair | 11.7 | 12.9 | 13.9 | 15.5 | 17.0 | 20.5 | 23.0 | 25.3 | 26.9 | 31.6 |
| Other government expenditures | 59.8 | 55.6 | 62.0 | 58.4 | 58.8 | 63.1 | 75.5 | 64.4 | 68.9 | 69.2 |
| Government administration | 69.5 | 69.8 | 70.0 | 68.3 | 66.7 | 58.6 | 57.6 | 55.0 | 55.4 | 54.1 |
| General agricultural programs | 47.8 | 52.5 | 57.1 | 60.2 | 84.4 | 62.4 | 65.1 | 63.4 | 67.9 | 70.3 |
| Forestry | 117.1 | 119.2 | 121.2 | 108.9 | 105.1 | 101.5 | 99.3 | 93.7 | 90.6 | 84.5 |
| State administration | 85.6 | 84.3 | 83.0 | 80.1 | 71.5 | 62.9 | 60.5 | 57.0 | 56.6 | 54.1 |
| Culture | 24.6 | 25.4 | 26.2 | 26.9 | 28.1 | 29.2 | 29.5 | 30.0 | 30.7 | 31.1 |
| Municipal services | 36.0 | 37.4 | 38.8 | 39.6 | 40.4 | 41.1 | 42.2 | 42.6 | 43.1 | 43.4 |
| Civilian police | 85.6 | 84.3 | 83.0 | 80.1 | 71.5 | 62.9 | 60.5 | 57.0 | 56.6 | 54.1 |
| Research and development | 12.1 | 13.2 | 14.3 | 14.9 | 15.7 | 17.1 | 19.2 | 21.2 | 23.9 | 26.4 |
| Outlays not elsewhere classified | 76.1 | 68.2 | 79.0 | 73.0 | 73.9 | 83.9 | 105.3 | 85.7 | 92.4 | 92.3 |
| Gross national product | 28.5 | 28.7 | 30.5 | 31.9 | 33.4 | 36.3 | 39.7 | 40.6 | 43.7 | 45.8 |

## Table A-9 (continued)
## USSR: Indexes of GNP by End Use

*1982=100*

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 47.0 | 48.7 | 50.7 | 53.1 | 53.6 | 56.3 | 59.3 | 62.7 | 66.4 | 69.7 |
| Consumer goods | 49.1 | 50.3 | 52.0 | 54.4 | 53.5 | 56.1 | 59.3 | 63.2 | 67.2 | 70.8 |
| Food | 56.4 | 57.7 | 59.5 | 62.9 | 60.9 | 63.4 | 66.4 | 70.2 | 74.2 | 77.7 |
| Animal products | 55.8 | 56.8 | 58.0 | 64.1 | 57.9 | 60.4 | 65.3 | 69.7 | 74.6 | 79.2 |
| Processed foods | 43.6 | 45.6 | 48.5 | 50.7 | 55.3 | 57.7 | 58.5 | 61.9 | 64.6 | 68.1 |
| Basic foods | 74.2 | 74.8 | 76.4 | 74.7 | 78.0 | 80.2 | 79.9 | 82.3 | 85.1 | 84.0 |
| Beverages | 36.8 | 39.7 | 43.7 | 45.9 | 47.7 | 50.2 | 53.1 | 57.2 | 60.4 | 67.3 |
| Soft goods | 38.3 | 39.8 | 41.2 | 41.4 | 42.9 | 45.9 | 49.9 | 54.4 | 59.2 | 63.7 |
| Durables | 19.5 | 19.9 | 21.0 | 20.9 | 22.9 | 25.5 | 28.7 | 31.7 | 35.2 | 37.7 |
| Consumer services | 43.4 | 45.9 | 48.4 | 50.9 | 53.7 | 56.6 | 59.2 | 61.9 | 64.9 | 67.6 |
| Household services | 40.6 | 43.0 | 45.4 | 47.6 | 50.1 | 52.8 | 55.2 | 58.1 | 61.1 | 63.8 |
| Housing | 53.9 | 56.6 | 59.0 | 61.3 | 63.3 | 65.3 | 67.4 | 69.5 | 71.7 | 73.8 |
| Utilities | 25.4 | 27.9 | 30.7 | 33.6 | 36.7 | 39.8 | 42.5 | 45.0 | 48.1 | 51.3 |
| Transportation | 22.0 | 24.4 | 27.7 | 30.8 | 33.3 | 36.4 | 40.5 | 44.5 | 48.9 | 52.8 |
| Communications | 25.4 | 26.9 | 28.6 | 30.4 | 32.8 | 36.1 | 40.0 | 44.1 | 47.2 | 51.1 |
| Repair and personal care | 29.3 | 30.7 | 32.2 | 33.9 | 36.5 | 39.9 | 42.6 | 46.0 | 49.4 | 53.2 |
| Recreation | 49.8 | 53.3 | 55.0 | 55.2 | 59.2 | 62.8 | 63.0 | 67.6 | 71.2 | 72.1 |
| Communal services | 47.9 | 50.4 | 53.3 | 56.4 | 59.6 | 62.7 | 65.6 | 68.0 | 71.0 | 73.8 |
| Education | 44.9 | 47.7 | 51.5 | 55.1 | 58.8 | 62.2 | 65.3 | 67.8 | 70.9 | 73.6 |
| Health | 53.1 | 55.2 | 56.3 | 58.7 | 60.8 | 63.6 | 66.2 | 68.2 | 71.2 | 74.0 |
| Investment | 38.1 | 42.5 | 44.0 | 40.5 | 49.3 | 54.1 | 54.0 | 55.9 | 59.1 | 62.7 |
| New fixed investment | 39.4 | 44.2 | 45.2 | 39.3 | 49.5 | 55.1 | 54.6 | 56.7 | 60.1 | 64.2 |
| Machinery and equipment | 18.4 | 20.0 | 22.5 | 25.0 | 28.2 | 30.2 | 31.9 | 34.3 | 37.1 | 38.8 |
| Construction and other | 51.3 | 53.5 | 55.8 | 57.9 | 60.4 | 65.2 | 67.3 | 73.5 | 77.2 | 80.8 |
| Net additions to livestock | 111.6 | 356.0 | 235.1 | −447.6 | 185.2 | 342.7 | 146.0 | −70.8 | −66.0 | 43.7 |
| Capital repair | 33.6 | 36.6 | 39.8 | 45.0 | 48.5 | 50.6 | 51.9 | 52.9 | 55.4 | 57.0 |
| Other government expenditures | 67.7 | 70.7 | 69.2 | 58.9 | 84.2 | 85.9 | 94.6 | 97.0 | 103.3 | 90.1 |
| Government administration | 51.9 | 48.3 | 49.3 | 49.4 | 51.5 | 54.2 | 57.2 | 61.1 | 64.5 | 67.7 |
| General agricultural programs | 67.8 | 42.5 | 41.8 | 41.2 | 42.7 | 44.0 | 46.6 | 50.9 | 54.7 | 55.6 |
| Forestry | 82.9 | 83.5 | 86.0 | 88.0 | 89.5 | 88.4 | 90.4 | 91.3 | 93.5 | 94.8 |
| State administration | 51.0 | 50.7 | 51.5 | 51.1 | 53.2 | 56.9 | 60.3 | 64.2 | 67.4 | 71.0 |
| Culture | 31.6 | 32.6 | 34.7 | 36.6 | 39.1 | 41.3 | 43.3 | 47.6 | 52.4 | 57.0 |
| Municipal services | 44.1 | 44.6 | 46.1 | 47.9 | 50.3 | 52.2 | 54.7 | 59.0 | 61.9 | 64.9 |
| Civilian police | 51.0 | 50.7 | 51.5 | 51.1 | 53.2 | 56.9 | 60.3 | 64.2 | 67.4 | 71.0 |
| Research and development | 30.2 | 33.7 | 37.4 | 40.3 | 43.7 | 46.0 | 49.0 | 51.1 | 54.5 | 58.2 |
| Outlays not elsewhere classified | 88.8 | 94.0 | 89.5 | 70.0 | 112.5 | 113.6 | 126.8 | 128.7 | 137.2 | 111.3 |
| Gross national product | 47.3 | 50.0 | 51.3 | 50.1 | 56.7 | 59.8 | 62.7 | 65.5 | 69.4 | 70.5 |

## Table A-9 (continued)
## USSR: Indexes of GNP by End Use

*1982 = 100*

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 72.8 | 75.4 | 77.1 | 79.8 | 82.9 | 86.2 | 88.0 | 90.0 | 92.1 | 94.6 |
| Consumer goods | 74.1 | 76.9 | 78.1 | 81.1 | 84.2 | 87.8 | 89.1 | 91.3 | 93.2 | 95.8 |
| Food | 80.5 | 82.8 | 83.1 | 85.9 | 88.9 | 92.0 | 92.3 | 93.7 | 95.2 | 97.3 |
| Animal products | 81.0 | 82.7 | 83.6 | 87.2 | 90.9 | 94.7 | 94.6 | 95.0 | 96.8 | 99.6 |
| Processed foods | 70.9 | 72.5 | 73.6 | 78.2 | 80.5 | 81.0 | 84.5 | 87.7 | 90.8 | 91.8 |
| Basic foods | 88.2 | 91.4 | 87.6 | 91.2 | 90.5 | 91.0 | 89.4 | 92.1 | 94.2 | 93.8 |
| Beverages | 71.6 | 75.0 | 78.8 | 76.9 | 83.7 | 89.9 | 93.1 | 94.9 | 92.8 | 97.7 |
| Soft goods | 68.2 | 71.2 | 73.0 | 75.3 | 77.9 | 81.7 | 85.3 | 88.1 | 90.5 | 94.0 |
| Durables | 42.1 | 47.6 | 54.6 | 59.0 | 63.8 | 70.0 | 74.5 | 81.1 | 84.5 | 88.3 |
| Consumer services | 70.4 | 72.9 | 75.3 | 77.7 | 80.7 | 83.5 | 85.9 | 87.6 | 90.1 | 92.7 |
| Household services | 66.5 | 69.2 | 72.2 | 74.9 | 78.2 | 81.5 | 84.1 | 85.8 | 88.5 | 91.4 |
| Housing | 75.8 | 77.8 | 79.8 | 81.8 | 83.8 | 85.8 | 87.7 | 89.6 | 91.5 | 93.3 |
| Utilities | 54.6 | 58.2 | 62.0 | 65.9 | 69.9 | 74.0 | 78.4 | 81.5 | 85.4 | 88.9 |
| Transportation | 56.8 | 61.0 | 65.6 | 69.4 | 75.1 | 81.0 | 86.0 | 83.3 | 86.1 | 90.4 |
| Communications | 54.7 | 58.4 | 62.3 | 66.2 | 70.3 | 74.6 | 78.5 | 82.0 | 85.5 | 89.6 |
| Repair and personal care | 56.6 | 59.5 | 62.8 | 66.3 | 69.8 | 73.3 | 76.8 | 79.9 | 84.4 | 88.6 |
| Recreation | 73.7 | 76.0 | 79.2 | 80.3 | 85.3 | 89.4 | 86.7 | 88.4 | 90.3 | 92.8 |
| Communal services | 76.8 | 79.0 | 80.4 | 82.1 | 84.6 | 86.8 | 88.9 | 90.5 | 92.3 | 94.7 |
| Education | 75.8 | 78.1 | 79.3 | 80.9 | 83.3 | 85.6 | 87.9 | 89.7 | 91.7 | 93.7 |
| Health | 78.4 | 80.5 | 82.4 | 84.2 | 86.7 | 88.8 | 90.6 | 92.0 | 94.6 | 96.4 |
| Investment | 70.6 | 73.2 | 75.8 | 81.6 | 85.8 | 86.2 | 90.5 | 93.7 | 95.2 | 95.1 |
| New fixed investment | 73.9 | 76.1 | 77.9 | 82.8 | 86.3 | 87.7 | 91.8 | 94.6 | 96.0 | 94.8 |
| Machinery and equipment | 43.6 | 46.0 | 49.7 | 53.5 | 58.9 | 66.4 | 72.8 | 76.9 | 83.4 | 86.4 |
| Construction and other | 88.1 | 93.1 | 97.2 | 100.1 | 102.5 | 105.3 | 104.7 | 103.8 | 103.7 | 100.9 |
| Net additions to livestock | 328.6 | 184.5 | 5.5 | 150.8 | 155.8 | −122.2 | 45.9 | 204.5 | 109.4 | 57.3 |
| Capital repair | 59.0 | 63.2 | 68.4 | 77.3 | 83.7 | 80.9 | 86.0 | 90.2 | 92.6 | 95.8 |
| Other government expenditures | 100.1 | 98.7 | 90.3 | 114.3 | 110.5 | 98.7 | 112.3 | 112.7 | 118.6 | 105.6 |
| Government administration | 69.4 | 72.2 | 74.9 | 77.4 | 80.6 | 83.3 | 85.8 | 88.1 | 90.6 | 92.9 |
| General agricultural programs | 55.6 | 59.3 | 62.0 | 64.4 | 67.1 | 70.2 | 76.6 | 78.3 | 83.2 | 86.4 |
| Forestry | 96.2 | 96.5 | 98.8 | 98.3 | 99.7 | 100.4 | 99.4 | 99.9 | 100.8 | 100.5 |
| State administration | 72.3 | 74.7 | 77.3 | 79.8 | 83.1 | 85.9 | 87.7 | 89.6 | 91.5 | 93.7 |
| Culture | 61.7 | 66.0 | 68.8 | 72.0 | 75.9 | 78.9 | 81.9 | 86.5 | 89.7 | 91.4 |
| Municipal services | 67.5 | 71.4 | 74.9 | 77.7 | 81.0 | 83.9 | 85.9 | 89.0 | 92.4 | 95.1 |
| Civilian police | 72.3 | 74.7 | 77.3 | 79.8 | 83.1 | 85.9 | 87.7 | 89.6 | 91.5 | 93.7 |
| Research and development | 63.0 | 67.1 | 71.9 | 76.7 | 80.0 | 83.9 | 85.1 | 87.4 | 90.1 | 93.9 |
| Outlays not elsewhere classified | 126.3 | 121.2 | 103.3 | 143.0 | 133.7 | 110.3 | 133.0 | 131.9 | 140.3 | 115.0 |
| Gross national product | 76.0 | 78.1 | 78.6 | 85.3 | 87.7 | 88.0 | 92.2 | 94.4 | 96.8 | 96.3 |

## Table A-9 (continued)
## USSR: Indexes of GNP by End Use

*1982 = 100*

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Consumption | 97.4 | 99.2 | 100.0 | 102.3 | 105.4 | 107.7 | 109.6 | 112.5 |
| Consumer goods | 98.6 | 100.3 | 100.0 | 102.3 | 105.6 | 107.6 | 109.0 | 111.4 |
| Food | 99.4 | 100.0 | 100.0 | 102.4 | 105.4 | 106.1 | 105.1 | 106.9 |
| Animal products | 101.2 | 101.2 | 100.0 | 102.9 | 106.8 | 110.8 | 113.2 | 117.4 |
| Processed foods | 96.2 | 98.4 | 100.0 | 101.2 | 102.3 | 102.0 | 106.3 | 112.5 |
| Basic foods | 94.6 | −96.2 | 100.0 | 101.8 | 103.6 | 104.6 | 110.2 | 109.8 |
| Beverages | 102.2 | 103.0 | 100.0 | 102.4 | 104.6 | 92.7 | 64.4 | 57.7 |
| Soft goods | 97.9 | 100.7 | 100.0 | 101.5 | 104.9 | 109.2 | 112.7 | 114.2 |
| Durables | 95.0 | 101.7 | 100.0 | 102.6 | 108.3 | 114.9 | 128.3 | 136.7 |
| Consumer services | 95.2 | 97.3 | 100.0 | 102.3 | 105.1 | 107.9 | 110.6 | 114.4 |
| Household services | 94.6 | 97.4 | 100.0 | 103.0 | 106.2 | 109.5 | 112.8 | 117.0 |
| Housing | 95.1 | 97.3 | 100.0 | 102.8 | 105.4 | 108.0 | 110.9 | 114.1 |
| Utilities | 92.9 | 96.2 | 100.0 | 104.2 | 109.5 | 114.1 | 118.7 | 123.6 |
| Transportation | 94.7 | 98.1 | 100.0 | 102.3 | 104.9 | 107.6 | 111.1 | 113.6 |
| Communications | 93.8 | 97.9 | 100.0 | 103.5 | 108.3 | 113.4 | 119.6 | 127.8 |
| Repair and personal care | 93.2 | 97.2 | 100.0 | 104.4 | 108.6 | 113.4 | 118.0 | 126.5 |
| Recreation | 96.8 | 98.9 | 100.0 | 100.8 | 102.2 | 104.3 | 104.7 | 106.0 |
| Communal services | 96.3 | 97.2 | 100.0 | 101.3 | 103.4 | 105.4 | 106.9 | 110.0 |
| Education | 95.9 | 96.8 | 100.0 | 100.9 | 102.9 | 105.0 | 107.1 | 109.6 |
| Health | 97.0 | 97.9 | 100.0 | 101.9 | 104.2 | 106.0 | 106.4 | 110.7 |
| Investment | 95.8 | 98.5 | 100.0 | 104.7 | 105.8 | 109.1 | 115.0 | 116.4 |
| New fixed investment | 95.2 | 98.1 | 100.0 | 104.9 | 106.1 | 109.2 | 116.4 | 117.1 |
| Machinery and equipment | 90.9 | 95.5 | 100.0 | 106.8 | 108.2 | 114.0 | 121.8 | 123.4 |
| Construction and other | 99.8 | 100.8 | 100.0 | 103.2 | 106.0 | 108.5 | 113.8 | 117.0 |
| Net additions to livestock | 0.7 | 43.6 | 100.0 | 130.8 | 44.3 | −6.5 | 72.4 | −86.1 |
| Capital repair | 98.0 | 100.2 | 100.0 | 103.8 | 104.5 | 108.7 | 110.0 | 113.9 |
| Other government expenditures | 95.2 | 88.6 | 100.0 | 103.5 | 99.4 | 89.9 | 100.0 | 96.0 |
| Government administration | 96.1 | 98.5 | 100.0 | 101.1 | 102.6 | 103.6 | 105.2 | 106.9 |
| General agricultural programs | 91.6 | 95.9 | 100.0 | 102.0 | 105.0 | 108.5 | 105.5 | 105.8 |
| Forestry | 100.3 | 100.2 | 100.0 | 99.8 | 99.6 | 99.4 | 99.0 | 96.8 |
| State administration | 96.8 | 98.9 | 100.0 | 101.2 | 102.6 | 102.8 | 105.5 | 107.6 |
| Culture | 95.2 | 98.2 | 100.0 | 99.9 | 100.9 | 101.8 | 104.0 | 107.7 |
| Municipal services | 98.3 | 99.4 | 100.0 | 101.6 | 103.8 | 106.2 | 108.4 | 109.8 |
| Civilian police | 96.8 | 98.9 | 100.0 | 101.2 | 102.6 | 102.8 | 105.5 | 107.6 |
| Research and development | 99.2 | 102.3 | 100.0 | 102.4 | 105.3 | 107.1 | 108.5 | 112.0 |
| Outlays not elsewhere classified | 93.2 | 79.4 | 100.0 | 104.8 | 95.8 | 77.9 | 94.7 | 85.4 |
| Gross national product | 96.6 | 97.5 | 100.0 | 103.2 | 104.7 | 105.6 | 109.8 | 111.3 |

## Table A-10
## USSR: Shares of GNP by End Use

*Percent*

| | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 55.5 | 54.7 | 55.0 | 52.0 | 52.9 | 54.2 | 52.7 | 52.7 | 52.6 | 54.3 |
| Consumer goods | 36.3 | 35.9 | 36.6 | 33.0 | 34.3 | 35.1 | 34.0 | 34.1 | 33.9 | 35.0 |
| Food | 32.0 | 30.1 | 29.8 | 26.5 | 26.5 | 26.1 | 25.0 | 24.8 | 24.5 | 25.2 |
| Animal products | 15.4 | 14.1 | 16.0 | 13.7 | 14.5 | 14.6 | 13.9 | 13.7 | 13.6 | 14.0 |
| Processed foods | 1.4 | 1.9 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 |
| Basic foods | 13.2 | 11.2 | 9.1 | 7.8 | 6.8 | 6.0 | 5.6 | 5.7 | 5.7 | 5.7 |
| Beverages | 2.0 | 2.8 | 2.7 | 2.9 | 3.3 | 3.6 | 3.5 | 3.5 | 3.4 | 3.5 |
| Soft goods | 3.7 | 4.7 | 5.2 | 4.9 | 5.8 | 6.0 | 6.0 | 6.0 | 6.0 | 6.3 |
| Durables | 0.6 | 1.1 | 1.6 | 1.6 | 2.1 | 3.0 | 3.1 | 3.3 | 3.3 | 3.5 |
| Consumer services | 19.2 | 18.8 | 18.4 | 19.0 | 18.6 | 19.0 | 18.7 | 18.6 | 18.7 | 19.3 |
| Household services | 10.7 | 10.5 | 10.7 | 10.9 | 10.8 | 11.5 | 11.3 | 11.3 | 11.3 | 11.8 |
| Housing | 7.3 | 6.6 | 6.4 | 6.1 | 5.6 | 5.5 | 5.3 | 5.3 | 5.3 | 5.4 |
| Utilities | 0.8 | 0.8 | 0.9 | 1.1 | 1.2 | 1.4 | 1.4 | 1.4 | 1.5 | 1.5 |
| Transportation | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Communications | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Repair and personal care | 1.3 | 1.2 | 1.2 | 1.3 | 1.5 | 1.7 | 1.7 | 1.7 | 1.7 | 1.8 |
| Recreation | 0.7 | 1.1 | 1.2 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 |
| Communal services | 8.4 | 8.3 | 7.7 | 8.0 | 7.7 | 7.5 | 7.4 | 7.3 | 7.3 | 7.5 |
| Education | 5.4 | 5.1 | 4.6 | 5.0 | 4.8 | 4.7 | 4.6 | 4.6 | 4.6 | 4.7 |
| Health | 3.0 | 3.2 | 3.2 | 3.0 | 2.9 | 2.9 | 2.8 | 2.8 | 2.8 | 2.8 |
| Investment | 14.5 | 20.3 | 24.5 | 27.5 | 28.3 | 29.8 | 29.8 | 30.2 | 29.9 | 30.0 |
| New fixed investment | 11.8 | 16.6 | 19.8 | 21.9 | 23.1 | 23.7 | 23.7 | 23.8 | 23.6 | 23.4 |
| Machinery and equipment | 1.9 | 2.5 | 3.5 | 4.6 | 5.2 | 6.9 | 7.2 | 7.4 | 7.9 | 8.2 |
| Construction and other | 9.8 | 13.1 | 15.6 | 15.6 | 16.6 | 17.2 | 16.3 | 15.8 | 15.4 | 15.0 |
| Net additions to livestock | 0.1 | 1.0 | 0.7 | 1.6 | 1.2 | 0.4 | 0.1 | 0.6 | 0.3 | 0.2 |
| Capital repair | 2.7 | 3.8 | 4.7 | 5.6 | 5.2 | 6.1 | 6.2 | 6.4 | 6.4 | 6.6 |
| Other government expenditures | 30.0 | 24.9 | 20.5 | 20.5 | 18.8 | 16.1 | 17.4 | 17.1 | 17.5 | 15.7 |
| Government administration | 7.0 | 4.6 | 3.1 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 |
| General agricultural programs | 0.7 | 0.7 | 0.6 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 |
| Forestry | 0.6 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| State administration | 3.2 | 1.8 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Culture | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Municipal services | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Civilian police | 1.8 | 1.1 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Research and development | 1.4 | 1.6 | 2.1 | 2.6 | 2.8 | 3.2 | 3.1 | 3.1 | 3.1 | 3.3 |
| Outlays not elsewhere classified | 21.6 | 18.7 | 15.2 | 15.4 | 13.4 | 10.1 | 11.7 | 11.3 | 11.7 | 9.7 |
| Gross national product | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table A-10 (continued)**
**USSR: Shares of GNP by End Use**

*Percent*

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Consumption | 55.7 | 56.3 | 55.3 | 54.8 | 55.7 | 56.4 | 55.1 | 55.9 |
| Consumer goods | 36.0 | 36.2 | 35.2 | 34.9 | 35.5 | 35.9 | 35.0 | 35.3 |
| Food | 25.7 | 25.6 | 25.0 | 24.8 | 25.1 | 25.1 | 23.9 | 24.0 |
| Animal products | 14.2 | 14.1 | 13.6 | 13.5 | 13.8 | 14.2 | 14.0 | 14.3 |
| Processed foods | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 |
| Basic foods | 5.7 | 5.7 | 5.8 | 5.7 | 5.8 | 5.8 | 5.8 | 5.7 |
| Beverages | 3.7 | 3.7 | 3.5 | 3.5 | 3.5 | 3.1 | 2.1 | 1.8 |
| Soft goods | 6.5 | 6.7 | 6.4 | 6.3 | 6.5 | 6.7 | 6.6 | 6.6 |
| Durables | 3.7 | 4.0 | 3.8 | 3.8 | 3.9 | 4.2 | 4.5 | 4.7 |
| Consumer services | 19.8 | 20.0 | 20.0 | 19.9 | 20.1 | 20.5 | 20.2 | 20.6 |
| Household services | 12.1 | 12.4 | 12.4 | 12.4 | 12.6 | 12.9 | 12.7 | 13.0 |
| Housing | 5.5 | 5.6 | 5.6 | 5.6 | 5.6 | 5.7 | 5.6 | 5.7 |
| Utilities | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.8 | 1.8 | 1.8 |
| Transportation | 1.6 | 1.7 | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.7 |
| Communications | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 |
| Repair and personal care | 1.9 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.3 |
| Recreation | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Communal services | 7.6 | 7.6 | 7.6 | 7.5 | 7.5 | 7.6 | 7.4 | 7.6 |
| Education | 4.8 | 4.8 | 4.8 | 4.7 | 4.7 | 4.8 | 4.7 | 4.7 |
| Health | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.7 | 2.8 |
| Investment | 30.2 | 30.7 | 30.4 | 30.8 | 30.7 | 31.4 | 31.8 | 31.8 |
| New fixed investment | 23.4 | 23.9 | 23.8 | 24.2 | 24.1 | 24.6 | 25.2 | 25.0 |
| Machinery and equipment | 8.6 | 8.9 | 9.1 | 9.4 | 9.4 | 9.8 | 10.1 | 10.1 |
| Construction and other | 14.8 | 14.8 | 14.4 | 14.4 | 14.5 | 14.8 | 14.9 | 15.1 |
| Net additions to livestock | 0.0 | 0.1 | 0.3 | 0.4 | 0.1 | −0.0 | 0.2 | −0.2 |
| Capital repair | 6.7 | 6.8 | 6.6 | 6.7 | 6.6 | 6.8 | 6.7 | 6.8 |
| Other government expenditures | 14.1 | 13.0 | 14.3 | 14.4 | 13.6 | 12.2 | 13.0 | 12.3 |
| Government administration | 2.9 | 2.9 | 2.9 | 2.8 | 2.8 | 2.8 | 2.7 | 2.8 |
| General agricultural programs | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Forestry | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| State administration | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Culture | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Municipal services | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Civilian police | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Research and development | 3.5 | 3.5 | 3.4 | 3.3 | 3.4 | 3.4 | 3.3 | 3.4 |
| Outlays not elsewhere classified | 7.8 | 6.6 | 8.1 | 8.2 | 7.4 | 6.0 | 7.0 | 6.2 |
| Gross national product | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

## Table A-11
## USSR: Consumption in 1982 Established Prices

*Billion 1982 rubles*

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumer goods | 71.0 | 71.7 | 77.5 | 85.2 | 91.4 | 97.5 | 102.7 | 111.7 | 119.9 | 124.0 |
| Food | 56.0 | 54.6 | 59.3 | 64.7 | 67.2 | 71.8 | 74.8 | 81.2 | 86.8 | 88.4 |
| Animal products | 21.1 | 21.3 | 21.7 | 22.8 | 23.9 | 24.5 | 26.6 | 29.3 | 33.4 | 34.7 |
| Processed foods | 3.7 | 4.9 | 5.4 | 6.5 | 5.3 | 6.5 | 7.1 | 7.4 | 7.7 | 8.1 |
| Basic foods | 21.6 | 17.6 | 20.2 | 21.4 | 22.5 | 23.4 | 23.0 | 24.4 | 24.6 | 24.8 |
| Beverages | 9.6 | 10.8 | 12.1 | 14.0 | 15.5 | 17.3 | 18.1 | 20.2 | 21.2 | 20.9 |
| Soft goods | 13.2 | 14.9 | 15.8 | 17.4 | 20.1 | 21.2 | 23.0 | 24.6 | 26.5 | 28.5 |
| Durables | 1.8 | 2.1 | 2.4 | 3.2 | 4.1 | 4.5 | 4.9 | 5.9 | 6.5 | 7.1 |
| Consumer services | 19.8 | 20.6 | 21.5 | 22.5 | 23.9 | 25.6 | 26.5 | 27.7 | 29.3 | 31.0 |
| Household services | 7.5 | 8.0 | 8.4 | 8.8 | 9.4 | 10.2 | 10.6 | 11.2 | 12.1 | 13.1 |
| Housing | 2.3 | 2.3 | 2.4 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.1 |
| Utilities | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 | 1.3 | 1.4 | 1.5 |
| Transportation | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.4 | 1.5 | 1.7 | 1.9 | 2.1 |
| Communications | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 |
| Repair and personal care | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.1 | 3.1 | 3.1 | 3.3 | 3.8 |
| Recreation | 0.8 | 0.9 | 1.0 | 1.0 | 1.2 | 1.5 | 1.6 | 1.7 | 1.9 | 2.0 |
| Communal services | 12.3 | 12.6 | 13.1 | 13.7 | 14.5 | 15.4 | 15.9 | 16.5 | 17.1 | 17.8 |
| Education | 7.9 | 8.1 | 8.4 | 8.6 | 9.0 | 9.4 | 9.7 | 9.9 | 10.2 | 10.5 |
| Health | 4.4 | 4.5 | 4.7 | 5.1 | 5.5 | 6.0 | 6.2 | 6.5 | 6.9 | 7.3 |
| Consumption | 90.8 | 92.3 | 99.1 | 107.8 | 115.3 | 123.1 | 129.3 | 139.4 | 149.1 | 155.0 |

## Table A-11 (continued)
## USSR: Consumption in 1982 Established Prices

*Billion 1982 rubles*

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumer goods | 130.1 | 134.3 | 140.2 | 145.4 | 146.5 | 154.3 | 163.8 | 175.3 | 187.1 | 199.2 |
| Food | 91.6 | 94.5 | 98.8 | 103.9 | 103.0 | 107.4 | 112.3 | 119.0 | 125.6 | 133.0 |
| Animal products | 36.3 | 37.0 | 37.7 | 41.7 | 37.7 | 39.3 | 42.5 | 45.4 | 48.5 | 51.5 |
| Processed foods | 8.7 | 9.1 | 9.7 | 10.1 | 11.0 | 11.5 | 11.6 | 12.3 | 12.9 | 13.5 |
| Basic foods | 24.8 | 25.0 | 25.6 | 25.0 | 26.1 | 26.8 | 26.7 | 27.5 | 28.5 | 28.1 |
| Beverages | 21.8 | 23.5 | 25.9 | 27.1 | 28.2 | 29.7 | 31.4 | 33.8 | 35.7 | 39.8 |
| Soft goods | 30.6 | 31.7 | 32.9 | 33.0 | 34.2 | 36.6 | 39.8 | 43.4 | 47.2 | 50.8 |
| Durables | 8.0 | 8.1 | 8.5 | 8.5 | 9.3 | 10.4 | 11.7 | 12.9 | 14.4 | 15.4 |
| Consumer services | 32.8 | 34.7 | 36.8 | 39.0 | 41.4 | 44.0 | 46.4 | 48.8 | 51.4 | 53.9 |
| Household services | 14.0 | 14.9 | 15.9 | 16.9 | 18.1 | 19.4 | 20.6 | 22.1 | 23.6 | 25.0 |
| Housing | 3.3 | 3.4 | 3.6 | 3.7 | 3.9 | 4.0 | 4.1 | 4.2 | 4.4 | 4.5 |
| Utilities | 1.6 | 1.8 | 2.0 | 2.1 | 2.3 | 2.5 | 2.7 | 2.9 | 3.1 | 3.3 |
| Transportation | 2.4 | 2.6 | 3.0 | 3.3 | 3.6 | 3.9 | 4.3 | 4.8 | 5.3 | 5.7 |
| Communications | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 |
| Repair and personal care | 4.0 | 4.2 | 4.4 | 4.6 | 4.9 | 5.4 | 5.8 | 6.2 | 6.7 | 7.2 |
| Recreation | 2.1 | 2.2 | 2.3 | 2.3 | 2.4 | 2.6 | 2.6 | 2.8 | 2.9 | 3.0 |
| Communal services | 18.8 | 19.8 | 20.9 | 22.1 | 23.4 | 24.6 | 25.7 | 26.7 | 27.8 | 28.9 |
| Education | 11.1 | 11.7 | 12.7 | 13.6 | 14.5 | 15.3 | 16.1 | 16.7 | 17.5 | 18.1 |
| Health | 7.7 | 8.1 | 8.2 | 8.6 | 8.9 | 9.3 | 9.7 | 10.0 | 10.4 | 10.8 |
| Consumption | 162.9 | 169.1 | 177.1 | 184.4 | 187.9 | 198.4 | 210.1 | 224.1 | 238.6 | 253.2 |

## Table A-11 (continued)
## USSR: Consumption in 1982 Established Prices

*Billion 1982 rubles*

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumer goods | 210.3 | 219.4 | 225.5 | 232.4 | 243.1 | 255.1 | 261.7 | 269.6 | 274.2 | 283.3 |
| Food | 138.7 | 143.2 | 145.0 | 148.3 | 154.9 | 161.4 | 163.4 | 166.3 | 167.5 | 172.3 |
| Animal products | 52.7 | 53.8 | 54.4 | 56.7 | 59.1 | 61.6 | 61.5 | 61.9 | 63.0 | 64.8 |
| Processed foods | 14.1 | 14.4 | 14.6 | 15.6 | 16.0 | 16.1 | 16.8 | 17.4 | 18.1 | 18.3 |
| Basic foods | 29.5 | 30.6 | 29.3 | 30.5 | 30.3 | 30.4 | 29.9 | 30.8 | 31.5 | 31.4 |
| Beverages | 42.4 | 44.4 | 46.6 | 45.5 | 49.5 | 53.2 | 55.1 | 56.2 | 54.9 | 57.8 |
| Soft goods | 54.4 | 56.8 | 58.2 | 60.0 | 62.1 | 65.1 | 68.0 | 70.3 | 72.2 | 75.0 |
| Durables | 17.2 | 19.4 | 22.3 | 24.1 | 26.0 | 28.6 | 30.4 | 33.1 | 34.5 | 36.0 |
| Consumer services | 56.5 | 58.8 | 60.9 | 62.9 | 65.7 | 68.3 | 70.6 | 71.8 | 74.1 | 76.5 |
| Household services | 26.4 | 27.8 | 29.3 | 30.7 | 32.5 | 34.3 | 35.7 | 36.3 | 37.7 | 39.3 |
| Housing | 4.6 | 4.7 | 4.9 | 5.0 | 5.1 | 5.2 | 5.3 | 5.4 | 5.6 | 5.7 |
| Utilities | 3.5 | 3.7 | 4.0 | 4.2 | 4.5 | 4.7 | 5.0 | 5.2 | 5.4 | 5.7 |
| Transportation | 6.1 | 6.6 | 7.0 | 7.5 | 8.1 | 8.7 | 9.2 | 9.0 | 9.3 | 9.7 |
| Communications | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 |
| Repair and personal care | 7.7 | 8.1 | 8.5 | 9.0 | 9.5 | 9.9 | 10.4 | 10.8 | 11.4 | 12.0 |
| Recreation | 3.0 | 3.1 | 3.3 | 3.3 | 3.5 | 3.7 | 3.6 | 3.7 | 3.7 | 3.8 |
| Communal services | 30.1 | 31.0 | 31.5 | 32.2 | 33.2 | 34.0 | 34.9 | 35.5 | 36.4 | 37.1 |
| Education | 18.7 | 19.2 | 19.5 | 19.9 | 20.5 | 21.1 | 21.6 | 22.1 | 22.6 | 23.1 |
| Health | 11.4 | 11.7 | 12.0 | 12.3 | 12.7 | 13.0 | 13.2 | 13.4 | 13.8 | 14.1 |
| Consumption | 266.8 | 278.1 | 286.3 | 295.3 | 308.7 | 323.5 | 332.3 | 341.4 | 348.3 | 359.8 |

## Table A-11 (continued)
## USSR: Consumption in 1982 Established Prices

*Billion 1982 rubles*

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Consumer goods | 293.9 | 300.3 | 298.1 | 304.5 | 314.3 | 316.2 | 311.9 | 316.5 |
| Food | 177.1 | 178.5 | 177.6 | 181.8 | 186.4 | 182.2 | 169.8 | 169.7 |
| Animal products | 65.9 | 65.8 | 65.1 | 67.0 | 69.5 | 72.1 | 73.7 | 76.4 |
| Processed foods | 19.1 | 19.6 | 19.9 | 20.1 | 20.3 | 20.3 | 21.1 | 22.4 |
| Basic foods | 31.6 | 32.2 | 33.5 | 34.1 | 34.7 | 35.0 | 36.9 | 36.7 |
| Beverages | 60.5 | 61.0 | 59.2 | 60.6 | 61.9 | 54.9 | 38.1 | 34.2 |
| Soft goods | 78.0 | 80.3 | 79.7 | 80.9 | 83.7 | 87.1 | 89.9 | 91.1 |
| Durables | 38.7 | 41.5 | 40.8 | 41.8 | 44.2 | 46.9 | 52.3 | 55.7 |
| Consumer services | 78.8 | 80.6 | 82.8 | 84.7 | 87.1 | 89.5 | 91.7 | 95.2 |
| Household services | 41.1 | 42.5 | 43.6 | 45.0 | 46.6 | 48.2 | 49.8 | 52.0 |
| Housing | 5.8 | 5.9 | 6.1 | 6.3 | 6.4 | 6.6 | 6.7 | 6.9 |
| Utilities | 5.9 | 6.1 | 6.4 | 6.6 | 7.0 | 7.3 | 7.6 | 7.9 |
| Transportation | 10.2 | 10.5 | 10.7 | 11.0 | 11.3 | 11.6 | 11.9 | 12.2 |
| Communications | 2.6 | 2.7 | 2.7 | 2.8 | 3.0 | 3.1 | 3.3 | 3.5 |
| Repair and personal care | 12.6 | 13.2 | 13.6 | 14.1 | 14.7 | 15.4 | 16.0 | 17.1 |
| Recreation | 4.0 | 4.1 | 4.1 | 4.2 | 4.2 | 4.3 | 4.3 | 4.4 |
| Communal services | 37.8 | 38.1 | 39.2 | 39.7 | 40.5 | 41.3 | 41.9 | 43.1 |
| Education | 23.6 | 23.8 | 24.6 | 24.8 | 25.3 | 25.8 | 26.4 | 27.0 |
| Health | 14.1 | 14.3 | 14.6 | 14.9 | 15.2 | 15.5 | 15.5 | 16.2 |
| Consumption | 372.7 | 380.9 | 380.9 | 389.3 | 401.3 | 405.7 | 403.7 | 411.7 |

## Table A-12
## USSR: Average Annual Growth of Consumption in 1982 Established Prices

*Percent*

| | 1951-55 | 1956-60 | 1961-65 | 1966-70 | 1971-75 | 1976-80 | 1981-85 | 1986-87 |
|---|---|---|---|---|---|---|---|---|
| Consumer goods | 6.6 | 5.9 | 3.5 | 6.4 | 3.9 | 2.9 | 1.5 | 0.0 |
| Food | 5.1 | 5.0 | 3.2 | 5.3 | 3.1 | 1.9 | 0.6 | −3.5 |
| Animal products | 3.1 | 8.2 | 1.6 | 6.0 | 3.2 | 1.3 | 1.8 | 2.9 |
| Processed foods | 12.1 | 5.8 | 5.8 | 4.2 | 2.7 | 3.5 | 1.2 | 5.0 |
| Basic foods | 1.6 | 1.2 | 1.6 | 1.9 | 0.6 | 0.8 | 2.0 | 2.5 |
| Beverages | 12.5 | 4.6 | 6.4 | 7.3 | 4.7 | 2.6 | −1.9 | −21.1 |
| Soft goods | 10.1 | 7.5 | 3.7 | 8.3 | 3.7 | 3.7 | 2.2 | 2.3 |
| Durables | 19.6 | 12.3 | 5.5 | 10.6 | 10.7 | 6.3 | 3.9 | 9.0 |
| Consumer services | 5.2 | 5.1 | 6.1 | 5.1 | 3.9 | 2.9 | 2.6 | 3.1 |
| Household services | 6.1 | 6.6 | 6.8 | 6.3 | 5.4 | 3.7 | 3.2 | 3.9 |
| Housing | 2.7 | 4.8 | 3.9 | 3.0 | 2.5 | 2.1 | 2.6 | 2.8 |
| Utilities | 5.9 | 6.6 | 9.4 | 6.5 | 6.3 | 4.7 | 4.2 | 4.1 |
| Transportation | 12.3 | 11.2 | 10.6 | 9.3 | 7.3 | 3.2 | 2.6 | 2.7 |
| Communications | 8.6 | 7.3 | 7.3 | 8.6 | 6.4 | 4.7 | 3.9 | 6.2 |
| Repair and personal care | 3.9 | 5.3 | 6.4 | 7.3 | 5.3 | 4.9 | 4.0 | 5.6 |
| Recreation | 14.1 | 7.2 | 4.8 | 3.2 | 3.9 | 1.6 | 1.5 | 0.8 |
| Communal services | 4.6 | 4.1 | 5.5 | 4.1 | 2.5 | 2.1 | 1.8 | 2.2 |
| Education | 3.5 | 3.3 | 6.8 | 4.0 | 2.5 | 2.3 | 1.8 | 2.2 |
| Health | 6.3 | 5.3 | 3.7 | 4.3 | 2.5 | 1.8 | 1.8 | 2.2 |
| Consumption | 6.3 | 5.8 | 4.0 | 6.1 | 3.9 | 2.9 | 1.7 | 0.7 |

## Table A-13
## USSR: Consumption Per Capita in 1982 Established Prices

*1982 rubles per capita*

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumer goods | 394.2 | 391.6 | 416.9 | 448.6 | 473.4 | 497.1 | 514.5 | 549.6 | 579.6 | 589.0 |
| Food | 311.0 | 298.4 | 319.1 | 340.3 | 348.2 | 366.1 | 374.8 | 399.7 | 420.0 | 420.1 |
| Animal products | 117.1 | 116.5 | 116.8 | 120.0 | 123.8 | 125.0 | 133.0 | 144.2 | 161.4 | 164.8 |
| Processed foods | 20.5 | 26.6 | 29.0 | 34.0 | 27.5 | 33.3 | 35.8 | 36.3 | 37.3 | 38.4 |
| Basic foods | 120.0 | 96.3 | 108.5 | 112.6 | 116.8 | 119.4 | 115.2 | 119.9 | 119.0 | 117.7 |
| Beverages | 53.5 | 59.1 | 64.8 | 73.7 | 80.1 | 88.4 | 90.8 | 99.3 | 102.4 | 99.1 |
| Soft goods | 73.0 | 81.5 | 84.7 | 91.4 | 104.0 | 108.3 | 115.3 | 120.9 | 128.4 | 135.4 |
| Durables | 10.1 | 11.6 | 13.1 | 16.9 | 21.2 | 22.7 | 24.4 | 29.0 | 31.3 | 33.5 |
| Consumer services | 110.2 | 112.5 | 115.8 | 118.5 | 124.0 | 130.2 | 132.8 | 136.4 | 141.4 | 147.2 |
| Household services | 41.9 | 43.5 | 45.3 | 46.5 | 48.8 | 51.8 | 53.2 | 55.3 | 58.6 | 62.4 |
| Housing | 12.6 | 12.7 | 12.8 | 12.9 | 13.0 | 13.2 | 13.4 | 13.7 | 14.2 | 14.7 |
| Utilities | 4.9 | 5.1 | 5.4 | 5.6 | 5.8 | 6.0 | 6.2 | 6.4 | 6.8 | 7.2 |
| Transportation | 4.3 | 4.7 | 5.1 | 5.6 | 6.2 | 7.1 | 7.5 | 8.4 | 9.3 | 10.0 |
| Communications | 1.8 | 1.9 | 2.1 | 2.2 | 2.3 | 2.5 | 2.6 | 2.8 | 2.9 | 3.1 |
| Repair and personal care | 14.1 | 14.3 | 14.6 | 14.9 | 15.3 | 15.6 | 15.4 | 15.4 | 16.2 | 18.0 |
| Recreation | 4.2 | 4.7 | 5.2 | 5.3 | 6.2 | 7.4 | 8.1 | 8.5 | 9.2 | 9.4 |
| Communal services | 68.4 | 69.0 | 70.5 | 72.0 | 75.3 | 78.5 | 79.6 | 81.0 | 82.9 | 84.8 |
| Education | 43.9 | 44.3 | 45.1 | 45.4 | 46.7 | 48.0 | 48.4 | 48.8 | 49.4 | 50.1 |
| Health | 24.4 | 24.6 | 25.4 | 26.6 | 28.6 | 30.5 | 31.1 | 32.2 | 33.4 | 34.7 |
| Consumption | 504.4 | 504.1 | 532.7 | 567.1 | 597.5 | 627.3 | 647.2 | 686.0 | 721.0 | 736.2 |
| Population (million persons) | 180.1 | 183.0 | 186.0 | 190.0 | 193.0 | 196.2 | 199.7 | 203.2 | 206.8 | 210.5 |

## Table A-13 (continued)
## USSR: Consumption Per Capita in 1982 Established Prices

*1982 rubles per capita*

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumer goods | 607.0 | 616.0 | 632.5 | 646.1 | 642.3 | 668.4 | 701.4 | 742.9 | 785.3 | 828.0 |
| Food | 427.3 | 433.5 | 445.8 | 461.6 | 451.6 | 465.0 | 480.8 | 504.4 | 526.9 | 553.0 |
| Animal products | 169.4 | 169.5 | 170.2 | 185.2 | 165.2 | 170.3 | 182.0 | 192.2 | 203.7 | 214.2 |
| Processed foods | 40.5 | 41.6 | 43.5 | 44.8 | 48.2 | 49.7 | 49.8 | 52.2 | 53.9 | 56.3 |
| Basic foods | 115.8 | 114.7 | 115.3 | 111.0 | 114.5 | 116.2 | 114.5 | 116.7 | 119.4 | 116.8 |
| Beverages | 101.6 | 107.7 | 116.8 | 120.6 | 123.7 | 128.8 | 134.6 | 143.4 | 149.9 | 165.6 |
| Soft goods | 142.6 | 145.3 | 148.2 | 146.7 | 149.8 | 158.3 | 170.5 | 183.8 | 198.1 | 211.0 |
| Durables | 37.2 | 37.2 | 38.6 | 37.9 | 40.9 | 45.0 | 50.1 | 54.7 | 60.3 | 64.0 |
| Consumer services | 153.0 | 159.2 | 166.2 | 173.3 | 181.6 | 190.6 | 198.5 | 206.6 | 215.9 | 224.2 |
| Household services | 65.2 | 68.5 | 71.9 | 75.0 | 79.1 | 84.1 | 88.3 | 93.7 | 99.1 | 104.0 |
| Housing | 15.3 | 15.8 | 16.2 | 16.5 | 16.9 | 17.2 | 17.5 | 17.9 | 18.3 | 18.6 |
| Utilities | 7.5 | 8.1 | 8.8 | 9.5 | 10.2 | 11.0 | 11.6 | 12.1 | 12.8 | 13.6 |
| Transportation | 11.0 | 12.0 | 13.4 | 14.7 | 15.7 | 17.0 | 18.6 | 20.3 | 22.1 | 23.6 |
| Communications | 3.2 | 3.4 | 3.5 | 3.7 | 3.9 | 4.3 | 4.7 | 5.1 | 5.4 | 5.8 |
| Repair and personal care | 18.5 | 19.1 | 19.7 | 20.4 | 21.7 | 23.4 | 24.8 | 26.4 | 28.1 | 30.0 |
| Recreation | 9.6 | 10.1 | 10.3 | 10.1 | 10.7 | 11.3 | 11.2 | 11.8 | 12.4 | 12.4 |
| Communal services | 87.7 | 90.7 | 94.3 | 98.3 | 102.4 | 106.6 | 110.2 | 112.9 | 116.8 | 120.2 |
| Education | 51.6 | 53.8 | 57.2 | 60.3 | 63.5 | 66.3 | 68.8 | 70.8 | 73.3 | 75.4 |
| Health | 36.1 | 36.9 | 37.0 | 38.0 | 38.9 | 40.2 | 41.4 | 42.2 | 43.6 | 44.9 |
| Consumption | 760.0 | 775.2 | 798.7 | 819.4 | 823.9 | 859.0 | 899.9 | 949.6 | 1,001.2 | 1,052.2 |
| Population (million persons) | 214.3 | 218.1 | 221.7 | 225.1 | 228.1 | 230.9 | 233.5 | 236.0 | 238.3 | 240.6 |

## Table A-13 (continued)
## USSR: Consumption Per Capita in 1982 Established Prices

*1982 rubles per capita*

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumer goods | 866.0 | 895.1 | 911.0 | 930.2 | 964.1 | 1,001.3 | 1,019.6 | 1,041.3 | 1,049.6 | 1,075.5 |
| Food | 571.3 | 584.2 | 585.9 | 593.7 | 614.6 | 633.5 | 636.4 | 642.2 | 641.2 | 654.1 |
| Animal products | 217.1 | 219.5 | 219.9 | 227.1 | 234.5 | 241.9 | 239.7 | 238.9 | 241.3 | 246.1 |
| Processed foods | 58.1 | 58.8 | 59.1 | 62.3 | 63.5 | 63.2 | 65.5 | 67.3 | 69.1 | 69.3 |
| Basic foods | 121.6 | 124.8 | 118.4 | 122.2 | 120.2 | 119.5 | 116.5 | 119.1 | 120.7 | 119.2 |
| Beverages | 174.6 | 181.1 | 188.4 | 182.1 | 196.4 | 208.9 | 214.7 | 216.9 | 210.2 | 219.5 |
| Soft goods | 223.9 | 231.7 | 235.2 | 240.2 | 246.3 | 255.6 | 264.8 | 271.4 | 276.4 | 284.6 |
| Durables | 70.8 | 79.2 | 89.9 | 96.3 | 103.3 | 112.1 | 118.4 | 127.8 | 132.0 | 136.8 |
| Consumer services | 232.7 | 239.7 | 246.0 | 252.0 | 260.6 | 268.2 | 274.9 | 277.4 | 283.8 | 290.3 |
| Household services | 108.8 | 113.4 | 118.5 | 123.1 | 129.0 | 134.6 | 139.1 | 140.2 | 144.5 | 149.3 |
| Housing | 19.0 | 19.3 | 19.6 | 19.9 | 20.2 | 20.5 | 20.8 | 21.0 | 21.3 | 21.5 |
| Utilities | 14.3 | 15.1 | 16.0 | 16.8 | 17.7 | 18.5 | 19.5 | 20.1 | 20.8 | 21.5 |
| Transportation | 25.1 | 26.7 | 28.5 | 29.9 | 32.0 | 34.2 | 36.0 | 34.6 | 35.4 | 36.9 |
| Communications | 6.1 | 6.5 | 6.9 | 7.2 | 7.6 | 8.0 | 8.3 | 8.6 | 8.9 | 9.3 |
| Repair and personal care | 31.6 | 32.9 | 34.4 | 36.0 | 37.5 | 39.0 | 40.6 | 41.8 | 43.8 | 45.6 |
| Recreation | 12.6 | 12.8 | 13.2 | 13.3 | 14.0 | 14.5 | 14.0 | 14.1 | 14.3 | 14.6 |
| Communal services | 124.0 | 126.3 | 127.4 | 128.9 | 131.6 | 133.6 | 135.8 | 137.1 | 139.3 | 141.0 |
| Education | 76.8 | 78.4 | 78.9 | 79.7 | 81.3 | 82.8 | 84.3 | 85.3 | 86.4 | 87.6 |
| Health | 47.1 | 47.9 | 48.6 | 49.2 | 50.2 | 50.9 | 51.5 | 51.9 | 52.8 | 53.4 |
| Consumption | 1,098.7 | 1,134.8 | 1,157.0 | 1,182.2 | 1,224.7 | 1,269.5 | 1,294.6 | 1,318.7 | 1,333.4 | 1,365.8 |
| Population (million persons) | 242.8 | 245.1 | 247.5 | 249.8 | 252.1 | 254.8 | 256.7 | 258.9 | 261.2 | 263.4 |

## Table A-13 (continued)
## USSR: Consumption Per Capita in 1982 Established Prices

*1982 rubles per capita*

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|
| Consumer goods | 1,103.1 | 1,117.7 | 1,099.6 | 1,113.1 | 1,137.4 | 1,133.7 | 1,108.1 | 1,114.4 |
| Food | 664.8 | 664.4 | 655.1 | 664.3 | 674.8 | 653.4 | 603.0 | 597.5 |
| Animal products | 247.2 | 245.0 | 240.0 | 244.7 | 251.6 | 258.6 | 261.7 | 269.1 |
| Processed foods | 71.8 | 72.8 | 73.4 | 73.6 | 73.6 | 72.7 | 75.1 | 78.8 |
| Basic foods | 118.8 | 119.7 | 123.4 | 124.5 | 125.5 | 125.4 | 130.9 | 129.4 |
| Beverages | 226.9 | 226.8 | 218.3 | 221.5 | 224.1 | 196.7 | 135.3 | 120.3 |
| Soft goods | 292.9 | 298.8 | 294.1 | 295.8 | 302.8 | 312.2 | 319.2 | 320.6 |
| Durables | 145.4 | 154.4 | 150.4 | 152.9 | 159.8 | 168.1 | 185.9 | 196.2 |
| Consumer services | 295.9 | 300.1 | 305.5 | 309.7 | 315.2 | 320.9 | 325.9 | 335.1 |
| Household services | 154.2 | 158.2 | 160.9 | 164.5 | 168.5 | 172.7 | 177.0 | 183.2 |
| Housing | 21.7 | 22.0 | 22.4 | 22.9 | 23.2 | 23.5 | 23.9 | 24.4 |
| Utilities | 22.2 | 22.8 | 23.5 | 24.3 | 25.2 | 26.1 | 26.9 | 27.7 |
| Transportation | 38.2 | 39.2 | 39.6 | 40.2 | 40.8 | 41.5 | 42.4 | 43.0 |
| Communications | 9.6 | 9.9 | 10.1 | 10.3 | 10.7 | 11.1 | 11.6 | 12.3 |
| Repair and personal care | 47.4 | 49.0 | 50.0 | 51.7 | 53.3 | 55.1 | 56.8 | 60.4 |
| Recreation | 15.0 | 15.2 | 15.3 | 15.2 | 15.3 | 15.5 | 15.4 | 15.4 |
| Communal services | 141.8 | 141.9 | 144.6 | 145.1 | 146.7 | 148.1 | 148.9 | 151.9 |
| Education | 88.7 | 88.7 | 90.8 | 90.7 | 91.7 | 92.7 | 93.7 | 95.0 |
| Health | 53.1 | 53.1 | 53.8 | 54.4 | 55.1 | 55.5 | 55.2 | 56.9 |
| Consumption | 1,399.1 | 1,417.7 | 1,405.1 | 1,422.8 | 1,452.6 | 1,454.5 | 1,434.0 | 1,449.5 |
| Population (million persons) | 266.4 | 268.7 | 271.1 | 273.6 | 276.3 | 278.9 | 281.5 | 284.0 |

**Table A-14**
**USSR: Average Annual Growth of Consumption Per Capita in 1982 Established Prices**

*Percent*

| | 1951-55 | 1956-60 | 1961-65 | 1966-70 | 1971-75 | 1976-80 | 1981-85 | 1986-87 |
|---|---|---|---|---|---|---|---|---|
| Consumer goods | 4.7 | 4.1 | 1.9 | 5.3 | 2.9 | 2.0 | 0.5 | −0.9 |
| Food | 3.3 | 3.1 | 1.7 | 4.2 | 2.1 | 1.0 | −0.3 | −4.4 |
| Animal products | 1.3 | 6.3 | 0.1 | 5.0 | 2.2 | 0.4 | 0.9 | 2.0 |
| Processed foods | 10.2 | 4.0 | 4.2 | 3.2 | 1.7 | 2.6 | 0.3 | 4.1 |
| Basic foods | −0.1 | −0.6 | 0.1 | 0.9 | −0.3 | −0.1 | 1.1 | 1.6 |
| Beverages | 10.6 | 2.8 | 4.9 | 6.3 | 3.7 | 1.7 | −2.8 | −21.8 |
| Soft goods | 8.2 | 5.7 | 2.1 | 7.2 | 2.7 | 2.8 | 1.3 | 1.3 |
| Durables | 17.6 | 10.4 | 3.9 | 9.5 | 9.6 | 5.3 | 2.9 | 8.1 |
| Consumer services | 3.4 | 3.3 | 4.5 | 4.1 | 2.9 | 2.0 | 1.6 | 2.2 |
| Household services | 4.3 | 4.7 | 5.2 | 5.3 | 4.4 | 2.8 | 2.3 | 3.0 |
| Housing | 0.9 | 3.0 | 2.4 | 2.0 | 1.5 | 1.2 | 1.6 | 1.9 |
| Utilities | 4.1 | 4.7 | 7.8 | 5.5 | 5.2 | 3.7 | 3.3 | 3.1 |
| Transportation | 10.4 | 9.3 | 9.0 | 8.2 | 6.3 | 2.3 | 1.7 | 1.8 |
| Communications | 6.7 | 5.4 | 5.7 | 7.6 | 5.4 | 3.8 | 2.9 | 5.2 |
| Repair and personal care | 2.1 | 3.5 | 4.8 | 6.2 | 4.3 | 4.0 | 3.0 | 4.7 |
| Recreation | 12.2 | 5.3 | 3.2 | 2.2 | 2.9 | 0.7 | 0.6 | −0.1 |
| Communal services | 2.8 | 2.3 | 4.0 | 3.1 | 1.5 | 1.2 | 0.9 | 1.3 |
| Education | 1.8 | 1.5 | 5.2 | 3.0 | 1.5 | 1.4 | 0.9 | 1.3 |
| Health | 4.5 | 3.5 | 2.2 | 3.2 | 1.5 | 0.9 | 0.9 | 1.3 |
| Consumption | 4.5 | 3.9 | 2.5 | 5.0 | 2.9 | 2.0 | 0.8 | −0.2 |
| Population | 1.7 | 1.8 | 1.5 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 |

## Appendix B

# Soviet GNP in Established Prices, 1982

This appendix documents the CIA's estimates of Soviet GNP in established prices in 1982—the base year for our estimates of GNP growth. The derivation of these estimates is described in the notes to the tables.

Tables appear in the following order:

B-1. USSR: Household Incomes, 1982

B-2. USSR: Household Outlays, 1982

B-3. USSR: Public-Sector Incomes, 1982

B-4. USSR: Public-Sector Outlays, 1982

B-5. USSR: GNP by Type of Income, 1982

B-6. USSR: GNP by End Use, 1982

The following abbreviated citations are used in the documentation:

| **Abbreviated Citation** | **Full Citation** |
|---|---|
| *GNP 1970* | CIA Research Aid, *USSR: Gross National Product Accounts, 1970* (A(ER) 75-76, November 1975) |
| *Gosbyudzhet 19—* | *Gosudarstvennyy byudzhet SSSR: 19—* (Moscow: Finansy i statistika, 19—) |
| *Narkhoz 19—* | *Narodnoye khozyaystvo SSSR v 19— g.* (Moscow: Finansy i statistika, 19—) |
| *Personal Incomes* | CIA, *USSR: Estimates of Personal Incomes and Savings* (SOV 89-10035, April 1989) |

## Table B-1
## USSR: Household Incomes, 1982

| | Billion Rubles |
|---|---|
| 1. State wages and salaries | 245.021 |
| 2. Net income of households from agriculture | 61.876 |
| a. Money wage payments by collective farms | 21.232 |
| (1) Payments to collective farm members | 19.500 |
| (2) Payments to hired workers | 1.732 |
| b. Net income from sales of farm products | 17.420 |
| c. Net farm income in kind | 23.225 |
| (1) Consumption in kind | 22.378 |
| (2) Investment in kind | 0.847 |
| 3. Income of the armed forces | 10.100 |
| a. Military pay and allowances | 6.590 |
| b. Military subsistence | 3.510 |
| 4. Other money income currently earned and statistical discrepancy | 14.753 |
| a. Private money income currently earned | 7.816 |
| (1) Private earnings in construction | 0.277 |
| (2) Private earnings in services | 7.539 |
| (a) Housing repair | 0.757 |
| (b) Repair and personal care | 4.019 |
| (c) Room rentals | 1.247 |
| (d) Education | 1.092 |
| (e) Health | 0.424 |
| b. Unidentified money income and statistical discrepancy | 6.937 |
| 5. Imputed net rent | 2.199 |
| 6. Imputed value of owner-supplied construction services | 0.554 |
| 7. Total income currently earned | 334.503 |
| 8. Transfer receipts | 58.185 |
| a. Pensions and allowances | 49.700 |
| b. Stipends | 2.500 |
| c. Interest payments to households | 5.671 |
| d. Net new bank loans to households | 0.271 |
| e. Profits distributed to consumer cooperative members | 0.043 |
| 9. Total income | 392.688 |

### Sources for Table B-1

1. ***State wages and salaries*** are from *Narkhoz 1983*, pp. 385, 393.

2. ***Net income of households from agriculture***

a. Money wage payments by collective farms

(1) Payments to collective farm members are from *Vestnik statistiki* (No. 7, 1986): p. 54.

(2) Payments to hired workers. As in *GNP 1970*, p. 23, it is assumed that 83.3 percent of the reported total number of hired workers in agriculture (1.4 million—*Narkhoz 1982*, p. 287) worked on collective farms and that they were paid at the implicit annual wage rate for collective farmers (1485 rubles—*Narkhoz 1985*, p. 277, and *Vestnik statistiki* (No. 7, 1986): p. 54).

b. Net income from sales of farm products is from *Personal Incomes*, p. 11.

c. Net farm income in kind

(1) Consumption in kind is derived from estimates in worksheets, as described in *GNP 1970*, appendix A.

(2) Investment in kind, the value of net additions to private livestock inventories, is estimated on the basis of changes in the number of cattle, hogs, sheep and goats, and poultry and the estimated average realized price per head for each animal. The calculation is presented below.

### Valuation of Net Additions to Private-Sector Livestock Inventories, 1982

| | Number of Animals Million Head | | Net Additions to Livestock Inventories | | |
|---|---|---|---|---|---|
| | End 1981 | End 1982 | Million Head | Rubles Per Head | Billion Rubles |
| Cattle | 23.4 | 24.2 | 0.8 | 567 | 0.454 |
| Hogs | 14.2 | 15.8 | 1.6 | 189 | 0.302 |
| Sheep and goats | 30.7 | 31.9 | 1.2 | 38 | 0.046 |
| Poultry | 325.9 | 337.1 | 11.3 | 4 | 0.045 |
| **Total** | — | — | — | — | **0.847** |

All quantity data are from *Narkhoz 1982*, p. 241, and *Narkhoz 1981*, p. 271, except poultry, which are from *Narkhoz 1985*, pp. 239-241. Poultry inventories are allocated between the public and private sectors on the basis of their shares in egg production.

### 3. *Income of the armed forces*

a. Military pay and allowances are a CIA estimate.

b. Military subsistence is a CIA estimate.

### 4. *Other money income currently earned and statistical discrepancy*

a. Private money income currently earned

(1) Private earnings in construction (0.277 billion rubles) are based on total expenditures for construction of private housing (1.736 billion rubles—sum of data for republics from *Narkhoz 1982*, p. 345) and assumptions about the distribution of those expenditures.

Private housing is constructed by state organizations and by private groups. The value of state-provided construction and repair of private housing in 1982 is given as 0.605 billion rubles in *Narkhoz 1982*, p. 452; that value (assumed to be in current prices) is doubled to take account of materials. The new value is believed to include sales to enterprises, as do the reported sales of other state-provided services. They probably represent repairs done for enterprises without their own repair crews. Sales to enterprises are estimated at 42 percent of the state-provided services (0.508 billion rubles) on the basis of notional extrapolation of data published in V.I. Dmitriyev, *Metodologicheskiye osnovy prognozirovaniya sprosa na bytovyye uslugi* (Moscow: Legkaya industriya, 1975), p.98. The remainder (0.702 billion rubles) are sales to households. It is arbitrarily assumed that these sales are divided equally between new construction and repair services. The resulting distribution is as follows:

| | Billion Rubles |
|---|---|
| **Total sales** | **1.210** |
| Sales to enterprises | 0.508 |
| Sales to households | 0.702 |
| Housing repair | 0.351 |
| New construction | 0.351 |

Privately provided construction of private housing is calculated as total construction of such housing (1.736 billion rubles) less state-provided construction (0.351 billion rubles), or 1.385 billion rubles. Of this amount, 60 percent is assumed to be labor payments (0.831 billion rubles) and 40 percent materials (0.554 billion rubles). The labor payments are further assumed to be one-third hired labor (0.277 billion rubles) and two-thirds owner-supplied construction services (0.554 billion rubles).

(2) Private earnings in services

(a) Private housing repair earnings (0.757 billion rubles) are estimated as total expenditures on housing repair less purchases of state-provided services and of materials used in privately provided repair services. Household expenditures for housing repair are estimated at 1.883 billion rubles in the derivation of table B-2, item 2, a. Purchases from state enterprises are estimated above in item 4, a, (1) at 0.351 billion rubles, which implies that purchases of privately supplied housing repair services are 1.532 billion rubles. Of this amount, expenditures for materials are estimated below at 0.775 billion rubles.

The material expenditures of 0.775 billion rubles are determined as total retail sales of construction materials to households (2.031 billion rubles, derived in table B-2, item 1, a, as in *GNP 1970*, p. 39) less other uses of those materials. Construction materials purchased by households are assumed to be used for privately provided housing construction and for state-provided repair and construction of private housing, as well as for privately provided housing repair. The materials used in privately provided housing construction are estimated above in item 4, a, (1) at 0.554 billion rubles. It is assumed that, as with other services included in Soviet retail trade statistics, the entire value of state-provided housing construction and repair services (net of sales to enterprises) is included in the listed purchases of construction materials. The residual retail sales of construction materials to households are 0.775 billion rubles:

| | Billion Rubles |
|---|---|
| Total retail sales of construction materials to households | 2.031 |
| **Less:** | |
| Materials used in privately provided new housing construction | 0.554 |
| Materials used in state-provided repair and construction of private housing | 0.702 |
| **Equals:** | |
| Materials used in privately provided housing repair | 0.775 |

(b) Private repair and personal care earnings (4.019 billion rubles) are estimated at 90 percent of household expenditures on these services. Expenditures (4.466 billion rubles) are obtained by deducting expenditures on housing construction and repair from private purveyors (estimated above) from total privately provided "everyday" services (5.500 billion rubles, based on an estimated "5-6 billion rubles every year" cited in *Izvestiya*, 19 August 1985).

(c) Private room rental earnings (1.247 billion rubles) are assumed to have risen during 1971-82 at the same rate as the leisure component of the GNP index for recreation. The 1970 value (0.484 billion rubles) is from *GNP 1970*, p. 42.

(d) Private education earnings (1.092 billion rubles) are equal to household expenditures for private educational services, which are assumed to be 7 percent of the state wage bill for education (from *Narkhoz 1983*, pp. 385-386, 393-394).

(e) Private health earnings (0.424 billion rubles) are equal to household expenditures for private health services, which are assumed to be 5 percent of the state wage bill for health (excluding physical culture, from *ibid.*).

b. Unidentified money income and statistical discrepancy is the difference between total income (item 9 below) and the sum of items 1; 2; 3; 4, a; 5; 6; and 8.

5. ***Imputed net rent*** is from the derivation of table B-2, item 2, a, (1).

6. ***Imputed value of owner-supplied construction services*** is from the derivation of item 4, a, (1) above.

7. ***Total income currently earned*** is the sum of items 1 through 6.

8. ***Transfer receipts***

a. Pensions and allowances are from *Narkhoz 1985*, p. 412.

b. Stipends are from *ibid.*

c. Interest income is the sum of interest on savings deposits (3.741 billion rubles—calculated at 2.2 percent of average annual deposits, from *Narkhoz 1984*, p. 462) and interest on state loans (1.930 billion rubles—from *Personal Incomes*, p. 11).

d. Net new bank loans to households are from *Narkhoz 1982*, p. 526.

e. Profits distributed to consumer cooperative members are from *Personal Incomes*, p. 11.

9. ***Total income*** is equal to total outlays from table B-2, item 8.

## Table B-2
## USSR: Household Outlays, 1982

| | Billion Rubles |
|---|---|
| 1. Retail sales of goods for consumption | 272.218 |
| a. State, cooperative, and commission sales | 264.392 |
| (1) Food | 145.273 |
| (2) Soft goods | 78.335 |
| (3) Durables | 40.784 |
| b. Collective farm ex-village market sales | 7.826 |
| (1) Food | 7.590 |
| (2) Soft goods | 0.236 |
| 2. Consumer services | 46.985 |
| a. Housing | 6.080 |
| (1) Gross rent | 4.913 |
| (2) Repair | 1.167 |
| b. Other services | 40.905 |
| (1) Utilities | 6.372 |
| (2) Transportation | 10.745 |
| (3) Communications | 2.725 |
| (4) Repair and personal care | 13.554 |
| (5) Recreation | 3.989 |
| (6) Education | 2.401 |
| (7) Health | 0.674 |
| (8) Other | 0.445 |
| 3. Consumption in kind | 25.888 |
| a. Farm consumption in kind | 22.378 |
| (1) Food | 22.314 |
| (2) Soft goods | 0.064 |
| b. Military subsistence | 3.510 |
| (1) Food | 2.410 |
| (2) Soft goods | 1.100 |
| 4. Total outlays for consumption | 345.092 |
| 5. Investment | 2.583 |
| a. Private housing construction | 1.736 |
| b. Farm investment in kind | 0.847 |
| 6. Total outlays for consumption and investment | 347.675 |
| 7. Transfer outlays | 45.013 |
| a. Net savings of households | 13.329 |
| b. Direct taxes | 26.638 |
| c. Other payments to the state | 5.046 |
| 8. Total outlays | 392.688 |

## Sources for Table B-2

### 1. *Retail sales of goods for consumption*

a. State, cooperative, and commission sales

Total sales to households of goods for consumption are estimated in the following tabulation:

| | Billion Rubles | | | | |
|---|---|---|---|---|---|
| | Total | Food | Soft Goods | Durables | Other |
| Total state and cooperative retail sales, including commission sales[1] | 295.653 | 155.149 | 82.104 | 46.684 | 11.716 |
| **Less:** | | | | | |
| Sales to institutions[2] | 14.783 | 9.357 | 2.167 | 2.581 | 0.677 |
| Producer goods sold to farm households[3] | 0.967 | — | — | — | 0.967 |
| Construction materials sold to households[4] | 2.031 | — | — | — | 2.031 |
| Kerosene[5] | 0.043 | — | 0.043 | — | — |
| Film rentals[6] | 0.237 | — | — | — | 0.237 |
| Commission sales and sales to rental agencies[7] | 5.000 | — | 1.000 | 4.000 | — |
| Business travel expenditures[8] | 0.518 | 0.518 | — | — | — |
| Services included in retail sales[9] | 7.683 | — | 5.762 | 1.921 | — |
| **Plus:** | | | | | |
| Unidentified retail sales[10] | — | — | 5.203 | 2.601 | 7.804 |
| **Equals:** | | | | | |
| Sales to households of goods for consumption | 264.392 | 145.273 | 78.335 | 40.784 | — |

[1] Total state and cooperative retail sales distributed by category of goods are given in *Narkhoz 1984*, pp. 483-485. Total sales of food include the entire food category plus sales of tobacco products.

**Total identified sales of soft goods are derived from the *Narkhoz* data as follows:**

| | Billion Rubles |
|---|---|
| **Total retail sales of soft goods** | **82.104** |
| Cloth | 7.650 |
| Clothing | 28.581 |
| Knitwear | 14.652 |
| Shoes | 13.168 |
| Laundry soap | 0.206 |
| Synthetic cleaning materials | 0.910 |
| Toilet soap and perfumes | 3.458 |
| Haberdashery | 7.881 |
| Matches | 0.169 |
| Kerosene | 0.043 |
| Notebooks and paper | 1.650 |
| Publications | 3.736 |

Total identified sales of durables are derived from the *Narkhoz* data as follows:

| | Billion Rubles |
|---|---|
| **Total retail sales of durables** | **46.684** |
| Furniture, carpets, and metal beds | 12.060 |
| Metal dishes | 1.874 |
| Glass dishes | 2.287 |
| Sporting goods | 0.923 |
| Radio goods | 5.490 |
| Musical instruments | 0.375 |
| Toys | 1.482 |
| Bicycles and motorbikes | 1.946 |
| Watches | 1.250 |
| Jewelry | 3.509 |
| Electrical goods | 3.508 |
| Sewing machines | 0.174 |
| Automobiles | 10.693 |
| Other household goods | 1.113 |

Other and unidentified retail sales include window glass (0.049 billion rubles); lumber, cement, and other construction materials (2.528 billion rubles); and an unidentified residual (9.139 billion rubles).

[2] Sales to institutions are estimated at 5.0 percent of total retail trade—the share given in M.I. Bakanov, *Ekonomicheskiy analiz v torgovle* (Moscow: Ekonomika, 1983), p. 51. The total is distributed among groups of goods on the basis of their shares estimated for 1970 (from *GNP 1970*, pp. 61-62). These shares are 63.30 percent for food, 14.66 percent for soft goods, 17.46 percent for durables, and 4.58 percent for other goods.

[3] **Producer goods sold to farm households are estimated at 5.55 percent (the share in 1970) of household income from sales of farm products. The latter are estimated at 17.420 billion rubles in table B-1, item 2, b.**

[4] Retail sales of construction materials (from *Narkhoz 1984*, pp. 484-485) are reduced by the share sold to institutions (21.2 percent, as in 1970).

[5] Retail sales of kerosene are from *Narkhoz 1984*, pp. 484-485.

[6] Film rentals are estimated by increasing the 1970 value by 21.6 percent, the increase in production of films during 1971-82 (*Narkhoz 1984*, p. 546).

[7] Commission sales are estimated at 5.000 billion rubles, allocated roughly 80 percent to durables and 20 percent to soft goods. The total and supporting information on distribution are given in A.S. Khrenov, *Regional'noye planirovaniye roznichnogo tovarooborota* (Moscow: Ekonomika, 1985), pp. 123-127.

[8] Business travel expenditures are arbitrarily estimated at 2 percent of total restaurant sales of 25.909 billion rubles (*Narkhoz 1984*, p. 478).

[9] Services to be deducted are estimated below from data in *Narkhoz 1985*, p. 492:

| | Billion Rubles |
|---|---|
| **Total productive services** | **9.688** |
| Shoe repair | 0.805 |
| Repair and tailoring of clothing | 3.648 |
| Processing expenses | 1.824 |
| Materials | 1.824 |
| Repair and tailoring of knitwear | 0.758 |
| Processing expenses | 0.379 |
| Materials | 0.379 |
| Repair of durables | 2.404 |
| Processing expenses | 1.202 |
| Materials | 1.202 |
| Furniture repair | 0.330 |
| Dry cleaning | 0.198 |
| Laundries | 0.391 |
| Photo services | 0.379 |
| Other productive services | 0.775 |

Services sold to enterprises, estimated at 20.7 percent of the above total, must be deducted because they are not counted in retail trade data. (In 1982, such sales to enterprises made up 19.9 percent of total sales of services in Estonia, according to *Voprosy razvitiya obsluzhivaniya naseleniya* (Tallinn: Akademiya nauk Estonskoy SSR, 1985), p. 27.) The revised total—7.683 billion rubles—is allocated 75 percent to soft goods and 25 percent to durables.

[10] Unidentified retail sales are allocated two-thirds to soft goods and one-third to durables.

b. Collective farm ex-village market sales

Total purchases by households and enterprises in collective farm markets are reported at 8.600 billion rubles in *Narkhoz 1984*, p. 472. Purchases by enterprises and state institutions in these markets are estimated at 0.744 billion rubles (9 percent of the total—their share in 1970) and subtracted from the total to obtain purchases by the population. Those purchases—7.826 billion rubles—are then allocated to food and soft goods, the latter estimated as a residual. Food purchases by households and enterprises combined (8.331 billion rubles) are derived on the basis of the percentage distribution of food purchases between state trade and collective farm markets (*Narkhoz 1984*, pp. 476, 483). Enterprise purchases of food (estimated at 0.741 billion rubles, or 95.7 percent of their total collective farm market purchases—the share used for 1970) are subtracted from the combined value. Household purchases of food therefore are 7.590 billion rubles and purchases of soft goods are 0.236 billion rubles.

2. ***Consumer services***

a. Housing

The components of this item are derived below and regrouped here to conform more closely with the accounting procedures of the United States and the United Nations. According to those procedures, maintenance expenditures by owner-occupiers are part of gross rent, while maintenance expenditures by tenants are final expenditures but not part of gross rent. Regrouped expenditures on housing consist of:

| | Billion Rubles |
|---|---|
| **Total housing expenditures** | **6.080** |
| Gross rent | 4.913 |
| Cash rent for urban public housing | 1.791 |
| Charges paid by members of housing cooperatives for maintenance | 0.207 |
| Imputed net rent on urban private and rural housing | 2.199 |
| Repair expenditures on urban private and rural housing | 0.716 |
| Repair expenditures by tenants of public housing | 1.167 |

(1) Cash rent for urban public housing. Cash rent (1.791 billion rubles) is the product of the midyear stock of urban public housing (1.167 billion square meters of living space) and an average rental rate of 1.535 rubles per square meter per year. The midyear stock is obtained from end-of-year stock data (*Narkhoz 1985*, p. 426), converted from useful space to living space with a coefficient of two- thirds. The average rental rate is slightly higher than the 1.5 rubles used for 1976 in the CIA's international comparison of consumption to allow for some upgrading of quality. (See Gertrude E. Schroeder and Imogene Edwards, *Consumption in the USSR: An International Comparison*, prepared for Joint Economic Committee, Congress of the United States (Washington: US Government Printing Office, 1981), p. 104.)

(2) Charges paid by members of housing cooperatives for maintenance. These charges (0.207 billion rubles) are the product of the midyear stock of housing (0.080 billion square meters of living space) and a charge of 2.59 rubles per square meter, as in 1970. The midyear stock is obtained by adding the increase during 1971-82 (*Narkhoz 1985*, p. 420) to the stock estimated for 1970.

(3) Imputed net rent on urban private and rural housing. This value (2.199 billion rubles) is the product of the midyear stock of such housing (1.433 billion square meters of living space) and the average rental rate of state housing (1.535 rubles per square meter, as above). The midyear stock of urban private housing is estimated at 0.372 billion square meters and the rural housing stock is estimated at 1.061 billion square meters of living space (*Narkhoz 1985*, p. 426). Conversion rates from total space to living space are those used for 1970.

(4) Repair expenditures. Repair expenditures by tenants of urban public housing are estimated at 1.167 billion rubles, using an annual outlay of 1 ruble per square meter of living space from a Soviet source citing it as applicable to 1977 (*Voprosy ekonomiki* (No. 7, 1979): p. 96). Repair expenditures on urban

private and rural housing are estimated at 0.716 billion rubles, using an annual outlay of 0.5 rubles per square meter, and added to imputed net rent to obtain gross rent.

b. Other services

(1) Utilities. Expenditures are calculated by multiplying their 1970 value by the utilities index from our estimates of GNP by end use in 1970 established prices. No price changes are known to have occurred for any of these utilities since 1970.

(2) Transportation. Outlays are calculated by multiplying their 1970 value by the GNP end-use index for passenger transportation in 1970 prices and adding an estimated price increase of 12.3 percent. That increase allows for a reported doubling of taxi fares in 1977, a reported 20 percent increase in air fares in 1977, and an assumed rise of 20 percent in fares for sea and river transportation (the actual size was not announced).

(3) Communications. Expenditures are calculated by multiplying their 1975 value by the GNP end-use index for communications in 1970 prices. No price changes are known to have occurred.

(4) Repair and personal care. Total expenditures (13.554 billion rubles) are the sum of state-supplied services (9.089 billion rubles), derived in the table below, and privately supplied services (4.466 billion rubles), estimated in the derivation of table B-1, item 4, a, (2), (b).

| | Billion Rubles |
|---|---|
| Total reported sales of everyday services (from *Narkhoz 1985*, p. 492) | 8.779 |
| **Less:** | |
| Enterprise purchases of services (25 percent) | 2.195 |
| 58 percent of sales of housing construction and repair services | 0.351 |
| **Plus:** | |
| 93.6 percent of materials used in tailoring and repair of clothing | 1.707 |
| 93.6 percent of materials used in repair of knitwear | 0.355 |
| 66 percent of materials used in repair of cars and appliances | 0.793 |
| **Equals:** | |
| Sales of everyday services to households | 9.089 |

(5) Recreation. Using data on the total value and distribution of "paid services to the population" in 1985 (from *Narkhoz 1985*, p. 488), the value of recreation expenditures in 1982 is estimated as follows:

| | Billion Rubles |
|---|---|
| State-provided recreation services | 4.342 |
| Entertainment | 1.740 |
| Resorts and tourism | 2.472 |
| Physical culture | 0.130 |
| **Less:** | |
| State subsidy | 1.600 |
| **Plus:** | |
| Private room rentals | 1.247 |
| **Equals:** | |
| Household outlays for recreation | 3.989 |

The 1985 values for entertainment and for resorts and tourism are moved back to 1982 using the respective components of the GNP recreation index. The 1985 value for physical culture is moved back using the change in budget expenditures (*Gosbyudzhet 1981-85*, p. 34). The subsidy to recreation is estimated in the derivation of table B-3, item 4. It is probable that this subsidy is included in the *Narkhoz* data on paid services (see *Planovoye khozyaystvo* (No. 6, 1987): pp. 115-116). Private room rentals are from table B-1, item 4, a, (2), (c).

(6) Education. Household outlays consist of payments for private services (estimated in table B-1, item 4, a, (2), (d) at 1.092 billion rubles) and fees paid for public education, mainly by parents of children in kindergarten (1.309 billion rubles). The latter figure is estimated from a value including nursery fees (1.350 billion rubles, from *Vestnik statistiki* (No. 1, 1984): p. 75), less payments for nursery care by parents and other sources (0.041 billion rubles, from *Gosbyudzhet 1981-85*, p. 61).

(7) Health. Household outlays are the sum of payments for private services (estimated in table B-1, item 4, a, (2), (e) at 0.424 billion rubles) and fees paid for care of children in nurseries and in fee-for-service

clinics. The latter is arbitrarily estimated at 0.250 billion rubles. (A 1985 value of 0.269 billion rubles can be estimated from the data on paid services used in the derivation of item 2, b, (5) above.)

(8) Other services. This new category includes all consumer services not explicitly covered in items 2, b, (1)-(7) above. The estimate (0.445 billion rubles) is derived from a 1985 value based on the paid services data cited above; that value is moved back to 1982 by the GNP index of consumption of all household services.

3. ***Consumption in kind***

a. Farm consumption in kind is from table B-1, item 2, c, (1).

(1) Food consumption is the difference between total consumption and soft goods consumption.

(2) Soft goods consumption consists of wool consumption, derived from estimates in worksheets, as described in *GNP 1970*, appendix A.

b. Military subsistence is from table B-1, item 3, b. The breakdown into food and soft goods is based on CIA estimates.

4. ***Total outlays for consumption*** are the sum of items 1, 2, and 3.

5. ***Investment***

a. Private housing construction is from *Narkhoz 1982*, p. 345 (the sum of data for republics).

b. Farm investment in kind is from table B-1, item 2, c, (2).

6. ***Total outlays for consumption and investment*** are the sum of items 4 and 5.

7. ***Transfer outlays***

a. Net savings (13.329 billion rubles) are the sum of (1) the increment in savings deposits (8.619 billion rubles, calculated from end-of-year totals in *Narkhoz 1982*, p. 414, and *Narkhoz 1981*, p. 450), (2) total state loans (1.000 billion rubles, from *Narkhoz 1983*, p. 547), and (3) net insurance premia (estimated at 3.710 billion rubles in *Personal Incomes*, p. 11).

b. Direct taxes are from *Gosbyudzhet 1981-85*, p. 5.

c. Other payments to the state (5.046 billion rubles) are the sum of estimates derived below of (1) trade union and other dues (4.108 billion rubles), (2) net lottery ticket purchases (0.343 billion rubles), (3) taxes on land and buildings owned by individuals and cooperatives (0.254 billion rubles), (4) collective farm market fees paid by households (0.050 billion rubles), and (5) other budget revenue from the population (0.292 billion rubles).

Dues are estimated as the sum of trade union dues (2.791 billion rubles), Communist Party dues (0.720 billion rubles), and other dues (0.597 billion rubles). Union and party dues are estimated in *Personal Incomes*, p. 13; other dues are assumed to have risen at the same rate as the sum of union and party dues during 1971-82. Net lottery ticket purchases are derived as the difference between "state internal prize loans and money-goods lotteries" (1.343 billion rubles, from *Gosbyudzhet 1981-85*, p. 5) and state loans (1.000 billion rubles, from *Narkhoz 1983*, p. 547). Taxes on land and buildings owned by individuals and cooperatives are given in *Gosbyudzhet 1981-85*, p. 65. Collective farm market fees paid by households are from *GNP 1970*, pp. 23-24 (assumed to be unchanged). Other budget revenue from the population is derived as the difference between total budget revenue from the population (28.577 billion rubles, from *Gosbyudzhet 1981-85*, p. 52) and the sum of (1) direct taxes from the population (26.638 billion rubles, from *ibid.*), (2) collective farm market fees paid by households (0.050 billion rubles, from above), (3) taxes on land and buildings owned by individuals and cooperatives (0.254 billion rubles, from above), and (4) lottery purchases and loans from the population (1.343 billion rubles, from above).

8. ***Total outlays*** are the sum of items 6 and 7.

## Table B-3
## USSR: Public-Sector Incomes, 1982

| | Billion Rubles |
|---|---|
| 1. Net income retained by organizations | 17.032 |
| a. Retained income of collective farms | −2.371 |
| b. Retained profits of state enterprises | 17.482 |
| c. Retained profits of consumer cooperatives | 1.049 |
| d. Retained profits of other organizations | 0.871 |
| 2. Charges to economic enterprises for special funds | 36.002 |
| a. Social insurance and social security | 23.947 |
| b. Education | 0.758 |
| c. Research | 6.590 |
| d. Social-cultural measures and sports activities | 0.300 |
| e. Militarized guards | 2.043 |
| f. Support for administration of higher echelons | 2.364 |
| 3. Taxes and other payments to the budget | 290.043 |
| a. Tax on income of collective farms | 0.756 |
| b. Tax on income of consumer cooperatives | 0.749 |
| c. Tax on income of other organizations | 0.373 |
| d. Deductions from profits of state enterprises | 100.503 |
| e. Turnover tax | 107.864 |
| f. Miscellaneous charges | 79.798 |
| 4. Allowances for subsidized loses n.e.c. | −54.526 |
| 5. Consolidated total charges against current product, net of depreciation | 288.551 |
| 6. Depreciation | 90.685 |
| 7. Consolidated total charges against current product | 379.236 |
| 8. Transfer receipts | 45.013 |
| a. Net savings of households | 13.329 |
| b. Direct taxes | 26.638 |
| c. Other payments to the state | 5.046 |
| 9. Consolidated net income | 424.249 |

## Sources for Table B-3

1. ***Net income retained by organizations***

a. Retained income of collective farms is calculated as follows from estimates in worksheets:

| | Billion Rubles |
|---|---|
| Gross income | 21.788 |
| **Less:** | |
| Payments to labor | 21.780 |
| Social security and insurance | 1.598 |
| **Equals:** | |
| Net income (loss) | −1.590 |
| **Less:** | |
| Income taxes | 0.756 |
| Other taxes | 0.025 |
| **Equals:** | |
| Retained income (loss) | −2.371 |

b. Retained profits of state enterprises (17.482 billion rubles) equal total profits (131.607 billion rubles—*Narkhoz 1983*, p. 536) less profits taxes (102.358 billion rubles—*Gosbyudzhet 1981-85*, p. 5) and less bonuses paid from profits. The latter (11.767 billion rubles) are calculated as follows (as in *GNP 1970*, p. 45):

| | Billion Rubles, Except Percent | | |
|---|---|---|---|
| | Value of Fund | Bonus Share (Percent) | Value of Bonuses |
| "Reform" incentive funds | 26.985 | 42.5 | 11.467 |
| Fund for victory in socialist competion | 0.342 | 65.0 | 0.222 |
| Fund for consumer goods from waste | 0.260 | 30.0 | 0.078 |
| **Total** | | | **11.767** |

The values of the funds from which bonuses are paid are from *Narkhoz 1985*, p. 556. The shares of bonuses in these funds are from *Narkhoz 1985*, p. 557, for reform incentive funds (bonuses paid from the material incentive fund as a share of total reform incentive funds in industry) and from *GNP 1970*, p. 45, for the other two funds.

c. Retained profits of consumer cooperatives (1.049 billion rubles) are the difference between net profits (2.139 billion rubles—*Narkhoz 1985*, p. 536) and the sum of (1) income taxes (0.749 billion rubles—35 percent of net profits), and (2) premia paid to employees (0.341 billion rubles—taken at one-half of the value given in *Narkhoz 1985*, p. 555).

d. Retained profits of other organizations. Income taxes paid by other organizations (0.373 billion rubles) are equal to the difference between total income taxes paid by consumer cooperatives and social organizations (1.122 billion rubles—*Gosbyudzhet 1981-85*, p. 5) and taxes paid by consumer cooperatives only (0.749 billion rubles—*ibid.*). Since the tax is levied at 25 to 35 percent of the total income of these organizations (V.V. Lavrov, L.P. Pavlova, and K.N. Plotnikov, *Gosudarstvennyy byudzhet* (Moscow: Finansy i statistika, 1981), p. 139), that income is 1.243 billion rubles (30 percent tax rate assumed) and retained income is 0.871 billion rubles.

2. ***Charges to economic enterprises for special funds***

a. Social insurance and social security. These charges (23.947 billion rubles) are the sum of budget receipts from such taxes (22.349 billion rubles, from *Gosbyudzhet 1981-85*, p. 5) and contributions of collective farms to centralized social security and insurance funds (1.598 billion rubles, calculated from estimates in worksheets).

b. Education. These charges (0.758 billion rubles) are estimated by raising the value for 1970 (0.400 billion rubles) by the increase in budget expenditures on "preparation of cadres" (*Narkhoz 1983*, p. 550).

c. Research. These charges (6.590 billion rubles) are estimated at half the difference between total outlays on science (24.900 billion rubles—*Narkhoz 1985*, p. 561) and budget outlays (11.720 billion rubles—*Gosbyudzhet 1981-85*, p. 15).

d. Social-cultural measures and sport activities. These charges (0.300 billion rubles) are estimated at 0.15 percent of the total state wage bill less wages in education, health, government administrative services, and part of science (the latter taken at half of budget outlays on science net of investment).

e. Militarized guards. These charges (2.043 billion rubles) are estimated at half the value of current outlays on civilian police, from table B-4, item 2, d, (3).

f. Support for administration of higher echelons. These charges (2.364 billion rubles) are estimated at 36.5 percent of outlays on state administration. The share represents an increase over that estimated for 1970 (30.8 percent) to allow for a rising share in total employment of groups of employees that are believed to be financed by charges to costs. Outlays on state administration are assumed to be 91.5 percent (the share used for 1970) of outlays on state administration and administration of social organizations (from table B-4, item 2, c).

3. ***Taxes and other payments to the budget***

a. Taxes on income of collective farms are derived in item 1, a above.

b. Taxes on income of consumer cooperatives are derived in item 1, c above.

c. Taxes on income of other organizations are derived in item 1, d above.

d. Deductions from profits of state enterprises. Reported deductions from profits (102.358 billion rubles, from *Gosbyudzhet 1981-85*, p. 5) are reduced by one-half of net insurance premia paid by households (1.855 billion rubles, from the derivation of table B-2, item 7, a). This deduction is made to avoid double-counting the part of profits of the state insurance agency that goes to the state budget.

e. Turnover tax. Net turnover tax is given as 100.602 billion rubles in *Gosbyudzhet 1981-85*, p. 5. Gross turnover tax is estimated at 107.864 billion rubles on the assumption that the net tax is 93.27 percent of the gross tax, the average share that prevailed in 1971-75, the last time such data were reported (in *Gosbyudzhet 1971-75*, p. 14).

f. Miscellaneous charges. First, a "gross" budget residual is calculated from data reported in *Gosbyudzhet 1981-85*, p. 5:

| | Billion Rubles |
|---|---|
| Total income from the socialist sector | 324.456 |
| **Less:** | |
| Turnover taxes | 100.602 |
| Payments of state enterprises and other economic organizations from profits | 102.358 |
| Income taxes from kolkhozes, consumer cooperatives, and social organizations | 1.878 |
| Social insurance | 22.349 |
| **Equals:** | |
| "Gross" residual | 97.270 |

Several other income items that are reported or can be estimated with reasonable accuracy reduce this residual substantially:

| | Billion Rubles |
|---|---|
| Residual | 97.270 |
| **Less:** | |
| Forestry income [1] | 0.797 |
| Local fees from enterprises [2] | 0.562 |
| Rental income [3] | 0.034 |
| Income from the reduction of administrative expenses [4] | 1.100 |
| Republic budget surplus [5] | 4.758 |
| Increase in the supply of money [6] | 1.400 |
| Parents' fees for kindergartens and nurseries [7] | 1.350 |
| Price markups on radio and television sets [8] | 0.444 |
| Surcharges on spare parts for agricultural machinery [9] | 1.000 |
| Income from foreign trade [10] | 65.298 |
| Geological prospecting charges [11] | 3.000 |
| Water usage fee [12] | 0.500 |
| Population-paid fees for passes to resorts [13] | 0.640 |
| Amortization deductions [14] | 8.539 |
| **Equals:** | |
| Revised residual | 7.847 |

The revised residual may include income from such sources as customs duties, gross receipts of budget organizations, miscellaneous levies and nontax revenues, unspent budget allocations, fines, deductions for the road economy, and bank loans to the budget equal to the increase in savings deposits of the population. In the absence of information on the content of the revised residual, we assume that 90 percent (7.062 billion rubles) represents current income.

[1] *Gosbyudzhet 1981-85*, p. 5.

[2] Total local taxes and fees (1.159 billion rubles, from *ibid.*, p. 65) less those paid by the population (0.597 billion rubles, from the derivation of table B-2, item 7, c).

[3] *Gosbyudzhet 1981-85*, p. 65.

[4] Plan figure, from *Finansy SSSR* (No. 1, 1982): p. 16.

[5] *Gosbyudzhet 1981-85*, p. 40.

[6] Estimate based on the 1971-82 increase in the population's disposable money income (from *Personal Incomes*, p. 11) less the addition to savings (from *Narkhoz 1982*, p. 414).

[7] *Vestnik statistiki* (No. 1, 1984): p. 75.

[8] Estimate from Jeanine Braithwaite, "The 1982 Seventeen Sector Input-Output Table for the Soviet Union" (Center for International Research, Soviet Branch Research Note, June 1987).

[9] *Ibid.*

[10] *Ibid.*

[11] *Ibid.*

[12] Estimate based on information in *Planovoye khozyaystvo* (No. 1, 1983): p. 124.

[13] These fees appear to be treated as budget income (see V.S. Pavlov, *Gosudarstvennyy byudzhet* (Moscow: Finansy i statistika, 1985), p. 287). They are estimated at 40 percent of the subsidy to recreation (1.600 billion rubles, from the derivation of item 4 below).

[14] New evidence indicates that a significant share of amortization deductions for replacement goes into the state budget. One source gives the share at about 17 percent (V.I. Bukato and M.A. Pesselya, *Finansovo-kreditnyye problemy intensifikatsii kapital'nogo stroitel'stva* (Moscow: Finansy i statistika, 1987), p. 136). Another source states that "the bulk" of amortization deductions in the trade sector goes into the budget (V.P. Boyken, *Rezhim ekonomii v torgovle* (Moscow: Ekonomika, 1986), p. 39). Amortization deductions are given in *Narkhoz 1985*, p. 558.

Total miscellaneous charges are then computed as the unidentified current income just derived plus those items enumerated in the derivation of the residual that represent current income not elsewhere included in the GNP accounts:

| | Billion Rubles |
|---|---|
| 90 percent of revised budget income residual | 7.062 |
| **Plus:** | |
| Forestry income | 0.797 |
| Local fees from enterprises | 0.562 |
| Rental income | 0.034 |
| Income from the reduction of administrative expenses | 1.100 |
| Price markups on radio and television sets | 0.444 |
| Surcharges on spare parts for agricultural machinery | 1.000 |
| Income from foreign trade | 65.298 |
| Geological prospecting charges | 3.000 |
| Water usage fee | 0.500 |
| **Equals:** | |
| Miscellaneous charges | 79.798 |

4. ***Allowances for subsidized losses n.e.c.***

These consist of the following subsidies:

| | Billion Rubles |
|---|---|
| **Total subsidies** | **54.526** |
| Price differences on purchases of agricultural products by industry | 29.900 |
| Price differences on purchases of industrial products by agriculture | 8.200 |
| Payments from gross turnover taxes | 7.262 |
| Payments from the budget to cover price reductions in retail trade | 0.700 |
| Housing | 4.847 |
| Budget allocations to the press | 0.187 |
| Art and radio broadcasting | 1.830 |
| Recreation | 1.600 |

The price differences on purchases of agricultural products by industry are given in *Finansy SSSR* (No. 4, 1985): p. 5. Of these, 1.700 billion rubles reflect subsidies on potatoes and vegetables sold in retail trade, according to V.N. Semenov, *Prodovol'stvennaya programma i finansy* (Moscow: Finansy i statistika, 1985), p. 57. The price differences on purchases of industrial products by agriculture are given in Semenov, p. 113. Payments from gross turnover taxes are the difference between gross and net turnover taxes (from item 3, e above). Subsidies to retail trade are estimated as the average for 1974-75 given in *Finansy SSSR* (No. 7, 1976): p. 8. No new data were found.

The subsidy to housing is estimated at 61.35 percent (as in 1970) of total state outlays on housing maintenance, including depreciation charged to social consumption funds (7.900 billion rubles—*Narkhoz 1985*, p. 412). Budget outlays on the press and on art and radio broadcasting are given in *Narkhoz 1983*, p. 550. The subsidy to recreation is from *Narkhoz 1985*, p. 412 (calculated as the difference between total outlays on "social security and social insurance" and the sum of "pensions" and "aid").

5. ***Consolidated total charges against product, net of depreciation***, are the sum of items 1 through 4.

6. ***Depreciation***

This is the sum of reported amortization charges by state enterprises (83.931 billion rubles—*Narkhoz 1985*, p. 558) and by collective farms (6.754 billion rubles—from estimates in worksheets.)

7. ***Consolidated charges against current product*** are the sum of items 5 and 6.

8. ***Transfer receipts*** are from table B-2, item 7.

9. ***Consolidated net income*** is the sum of items 7 and 8.

## Table B-4
## USSR: Public-Sector Outlays, 1982

| | Billion Rubles |
|---|---|
| 1. Communal services | 36.284 |
| a. Education | 22.218 |
| b. Health | 13.919 |
| c. Physical culture | 0.147 |
| 2. Government administrative services | 19.098 |
| a. General agricultural programs | 2.741 |
| b. Forestry | 1.050 |
| c. State administration and administration of social organizations | 7.080 |
| d. Municipal and related services | 8.227 |
| (1) Culture | 2.661 |
| (2) Municipal services | 1.481 |
| (3) Civilian police | 4.085 |
| 3. Investment | 228.671 |
| a. Fixed capital investment | 197.786 |
| (1) New fixed investment | 153.968 |
| (a) Machinery and equipment | 61.623 |
| (b) Construction and other capital outlays | 91.664 |
| (c) Net additions to livestock | 0.681 |
| (2) Capital repair | 43.818 |
| b. Inventory change | 30.885 |
| 4. Research and development | 20.234 |
| 5. Outlays n.e.c. | 61.778 |
| a. Net exports | 6.754 |
| b. Defense n.e.c., unidentified outlays, and statistical discrepancy | 55.024 |
| 6. Consolidated total value of goods and services, exclusive of sales to households | 366.064 |
| 7. Transfer outlays | 58.185 |
| a. Pensions and allowances | 49.700 |
| b. Stipends | 2.500 |
| c. Interest payments to households | 5.671 |
| d. Net new bank loans to households | 0.271 |
| e. Profits distributed to consumer cooperative members | 0.043 |
| 8. Consolidated total outlays | 424.249 |

## Sources for Table B-4

### *1. Communal services*

a. Education. Public-sector outlays on education (22.218 billion rubles) are the sum of wages (15.599 billion rubles), social insurance (1.092 billion rubles), and other current outlays (6.836 billion rubles), less parents' fees for education (1.309 billion rubles, estimated in the derivation of table B-2, item 2, b, (6)). Wages are the product of reported employment (9.454 million persons—*Narkhoz 1983*, p. 386) and the average wage rate (137.5 rubles per month—*ibid.*, p. 394). Social insurance is calculated as 7.0 percent of wages, the new rate introduced in 1982. The method of estimating other current outlays is set out in full in *USSR: Measures*, pp. 349-351. (The value for 1982 is that calculated as described there in current prices.)

b. Health. Public-sector outlays for health (13.919 billion rubles) are the sum of wages (8.478 billion rubles), social insurance (0.593 billion rubles), and other current outlays (5.097 billion rubles), less household outlays on public health services (0.250 billion rubles, estimated in the derivation of table B-2, item 2, b, (7)). Total wages are estimated as the total reported in union-republic budgets (*Gosbyudzhet 1981-85*, p. 59) divided by the ratio of union-republic budget outlays for health to total state budget outlays for health (94.46 percent—*ibid.*, p. 33). Social insurance is calculated as 7.0 percent of wages, the new rate introduced in 1982. Other current outlays are calculated (in current prices) as described in *USSR: Measures*, pp. 351-352.

c. Physical culture. Public-sector outlays on physical culture are 0.147 billion rubles, the sum of budgetary expenditures (0.113 billion rubles—*Narkhoz 1983*, p. 550) and other expenditures (0.034 billion rubles). The latter are calculated on the assumption that their share in total public outlays on physical culture is the same as reported for 1967 (23 percent—as cited in *USSR: Measures*, p. 138).

### *2. Government administrative services*

a. General agricultural programs. Total outlays (2.741 billion rubles) are the sum of wages (1.969 billion rubles), social insurance deductions (0.087 billion rubles), and other current outlays (0.685 billion rubles). Wages are the product of employment (1.041 million persons) and the average wage rate (157.6 rubles per month). Employment is determined as the difference between total state agricultural employment (12.019 million persons—*Narkhoz 1983*, p. 385) and employment at state farms and other state enterprises (10.978 million persons—*ibid.*). The wage rate is calculated from these data and those given in *ibid.*, p. 393. Social insurance deductions are derived as 4.4 percent of wages; the rate did not change in 1982. Other current outlays are assumed to be one-fourth of total current outlays, as for 1970.

b. Forestry. Total outlays (1.050 billion rubles) are the sum of wages (0.754 billion rubles), social insurance deductions (0.033 billion rubles), and other current outlays (0.262 billion rubles). Wages are the product of reported employment (0.459 million persons—*Narkhoz 1983*, p. 385) and the average wage rate (136.9 rubles per month—*Trud v SSSR* (Moscow: Finansy i statistika, 1988), p. 149). Social insurance deductions are calculated as 4.4 percent of wages, as for state agriculture. Other current outlays are assumed to be one-fourth of total current outlays.

c. State administration and administration of social organizations. Total outlays (7.080 billion rubles) are the sum of wages (4.962 billion rubles), social insurance deductions (0.347 billion rubles), and other current outlays (1.770 billion rubles). Wages are the product of employment (2.591 million persons—*Narkhoz 1983*, p. 386) and the average wage rate (159.6 rubles per month—*ibid.*, p. 394). Social insurance deductions are calculated as 7.0 percent of wages, the new rate set in 1982. Other current outlays are assumed to be one-fourth of total current outlays.

d. Municipal and related services

(1) Culture outlays (2.661 billion rubles) are the sum of wages (1.865 billion rubles), social insurance deductions (0.131 billion rubles), and other current outlays (0.665 billion rubles). Wages are the product of employment (1.362 million persons—*Narkhoz 1983*, p. 386) and the average wage rate (114.1 rubles per month—*ibid.*, p. 394). Social insurance deductions are calculated as 7.0 percent of wages, the new rate set in 1982. Other current outlays are assumed to be one-fourth of total current outlays.

(2) Municipal services outlays (1.481 billion rubles) are the sum of wages (1.061 billion rubles), social insurance deductions (0.050 billion rubles), and other current outlays (0.370 billion rubles). Wages are the product of employment (0.636 million persons) and the average wage rate (139.0 rubles per month). Employment is derived by extrapolation from data given for 1970 and 1980 (in *GNP 1970*, p. 54, and *Pravda* (24 December 1981): p. 3, respectively). The wage rate is that of the total housing-communal services sector (*Narkhoz 1983*, p. 394). Social insurance deductions are calculated as 4.7 percent of wages, the rate set in 1982 for communal services enterprises. Other current outlays are assumed to be one-fourth of total current outlays.

(3) Civilian police outlays (4.085 billion rubles) are the sum of wages (2.688 billion rubles), social insurance deductions (0.376 billion rubles), and other current outlays (1.021 billion rubles). Wages are the product of employment (1.011 million persons) and an estimated wage rate (221.6 rubles per month). Employment is estimated at 67.6 percent of employment in "other branches of material production" (1.495 million—*Narkhoz 1983*, p. 386). The wage rate is assumed to be 25 percent above the average wage rate of all state workers and employees (177.3 rubles per month—*ibid.*, p. 393). Social insurance deductions are calculated at an assumed 14.0 percent of wages, the rate set in 1982 for much of industry. Other current outlays are assumed to be one-fourth of total current outlays.

### 3. *Investment*

a. Fixed capital investment

(1) New fixed investment

(a) Machinery and equipment investment (61.623 billion rubles) is the sum of new fixed investment in machinery and equipment (59.300 billion rubles), changes in warehouse stocks of equipment requiring installation (0.097 billion rubles), and acquisition of equipment by budget-supported institutions (2.226 billion rubles).

The new fixed investment portion of this estimate is reported in *Narkhoz 1985*, p. 364, as the "equipment, instruments, and inventory" component of capital investment. This value, given in 1984 estimate prices, reflects the results of the 1982 industrial price reform, which was not actually effected in investment accounting until 1984.

The change in warehouse stocks of equipment requiring installation (0.097 billion rubles) is estimated on the assumption that the share of such stocks in the total value of unfinished construction was the same in 1981 and 1982 as in 1985 (10.73 percent, calculated from Goskomstat Press Release No. 34 (24 February 1987) and *Narkhoz 1986*, pp. 324, 332). Unfinished construction in 1981 and 1982 is given in *Narkhoz 1984*, p. 387.

The acquisition of equipment by budget-supported institutions is not included in Soviet investment data but is estimated as follows. In 1982, union-republic budget outlays for equipment were 1.598 billion rubles (*Gosbyudzhet 1981-85*, p. 49). That value is raised to reflect total state budget outlays by calculating that union-republic budgets financed 71.8 percent of total outlays on education and culture, health, physical culture, science, and administration in 1982 (reported in *Gosbyudzhet 1981-85*, pp. 25-26, 32, 34, 37).

(b) Construction and other capital investment outlays by the public sector are estimated as the difference between total new investment in construction and other fixed capital and private expenditures on housing construction (1.736 billion rubles, from table B-2, item 5, a). Total new investment in construction and other fixed capital is derived as the difference between the gross output of the construction sector (115.100 billion rubles, from *Narkhoz 1982*, p. 45) and estimated expenditures on capital repair of structures (21.700 billion rubles, estimated in worksheets).

(c) Net additions to livestock in the public sector are derived in the same manner as for the private sector (in table B-1, item 2, c, (2)). The calculation is shown below.

**Valuation of Net Additions to Public-Sector Livestock Inventories, 1982**

| | Number of Animals Million Head | | Net Additions to Livestock Inventories | | |
|---|---|---|---|---|---|
| | End 1981 | End 1982 | Million Head | Rubles Per Head | Billion Rubles |
| Cattle | 92.5 | 93.0 | 0.5 | 567 | 0.284 |
| Hogs | 59.1 | 60.9 | 1.8 | 189 | 0.340 |
| Sheep and goats | 117.8 | 116.6 | −1.2 | 38 | −0.046 |
| Poultry | 741.6 | 767.4 | 25.7 | 4 | 0.103 |
| **Total** | | | | | **0.681** |

(2) Capital repair

This value (43.818 billion rubles) is the sum of amortization deductions (33.702 billion rubles), budget expenditures (8.130 billion rubles), and collective farm outlays (1.986 billion rubles) for capital repair. The amortization deductions are from *Narkhoz 1985*, p. 558. The budget expenditures are estimated by raising the 1982 value for union-republic budgets (5.837 billion rubles—*Gosbyudzhet 1981-85*, p. 49) to reflect total state budget outlays, as in item 3, a, (1), (a) above. The collective farm outlays are estimated in worksheets.

### b. Inventory change

This value (30.885 billion rubles) is the sum of net changes in inventories of state enterprises (29.825 billion rubles, derived below) and of collective farms (1.060 billion rubles, estimated in worksheets). Inventory change for state enterprises is estimated from data given in *Narkhoz 1985*, p. 554, and *Narkhoz 1980*, pp. 511, 513. (The shares of the respective items in 1980 are applied to total values for 1981-82.)

| | Billion Rubles | |
|---|---|---|
| | End 1981 | End 1982 |
| Total working capital | 483.830 | 523.227 |
| **Less:** | | |
| Money assets | 42.577 | 46.044 |
| Financial claims | 47.415 | 51.276 |
| Other working capital | 3.871 | 4.186 |
| Expenses of future periods | 5.744 | 6.212 |
| Livestock | 17.950 | 19.412 |
| **Equals:** | | |
| Inventory change | 29.825 | |

### 4. ***Research and development***

This item is the sum of wages (10.251 billion rubles), social insurance deductions (0.718 billion rubles), and material expenditures (9.266 billion rubles). Wages are the product of employment (4.475 million persons—*Narkhoz 1983*, p. 386) and the average wage rate (190.9 rubles per month—*ibid.*, p. 394). Social insurance deductions are calculated as 7.0 percent of wages, the new rate set in 1982. Material expenditures are estimated in the same manner as the corresponding component of the GNP index for research and development (see *USSR: Measures*, pp. 108-110).

### 5. ***Outlays n.e.c.***

a. Net exports are the difference between total exports and total imports valued in foreign trade prices (*Narkhoz 1985*, p. 572).

b. Defense n.e.c., unidentified outlays, and statistical discrepancy is the difference between total outlays (item 8 below) and the sum of items 1; 2; 3; 4; 5, a; and 7.

6. ***Consolidated total value of goods and services, exclusive of sales to households***, is the sum of items 1 through 5.

7. ***Transfer outlays*** are from table B-1, item 8.

8. ***Consolidated total outlays*** are equal to total income from table B-3, item 9.

## Table B-5
## USSR: GNP by Type of Income, 1982

| | Billion Rubles |
|---|---|
| 1. Wage bill | 251.611 |
| a. State wages and salaries | 245.021 |
| b. Military pay and allowances | 6.590 |
| 2. Other and imputed income | 94.947 |
| a. Net income of households from agriculture | 61.876 |
| b. Military subsistence | 3.510 |
| c. Other money income currently earned and statistical discrepancy | 14.753 |
| d. Imputed net rent | 2.199 |
| e. Imputed value of owner-supplied construction services | 0.554 |
| f. Charges to economic enterprises for special funds | 12.055 |
| (1) Education | 0.758 |
| (2) Research | 6.590 |
| (3) Social-cultural measures and sports activities | 0.300 |
| (4) Militarized guards | 2.043 |
| (5) Support for administration of higher echelons | 2.364 |
| 3. Social insurance | 23.947 |
| 4. Profits | 119.413 |
| a. State enterprises | 117.985 |
| (1) Retained profits | 17.482 |
| (2) Deductions from profits | 100.503 |
| b. Collective farms | −1.615 |
| (1) Retained income | −2.371 |
| (2) Tax on income | 0.756 |
| c. Consumer cooperatives | 1.798 |
| (1) Retained profits | 1.049 |
| (2) Tax on income | 0.749 |
| d. Other organizations | 1.245 |
| (1) Retained profits | 0.871 |
| (2) Tax on income | 0.373 |
| 5. Depreciation | 90.685 |
| 6. Turnover and other indirect taxes | 187.662 |
| a. Turnover tax | 107.864 |
| b. Miscellaneous charges | 79.798 |
| 7. Allowances for subsidized losses n.e.c. | −54.526 |
| 8. Gross national product | 713.739 |

**Source Note**: This table combines the household and public-sector incomes derived in tables B-1 and B-3 respectively. Total GNP is equal to the sum of total incomes, excluding transfers, from those tables.

## Table B-6
## USSR: GNP by End Use, 1982

| | Billion Rubles |
|---|---|
| 1. Consumption | 381.375 |
| a. Goods | 298.106 |
| (1) Food | 177.587 |
| (2) Soft goods | 79.735 |
| (3) Durables | 40.784 |
| b. Services | 83.269 |
| (1) Housing | 6.080 |
| (2) Utilities | 6.372 |
| (3) Transportation | 10.745 |
| (4) Communications | 2.725 |
| (5) Repair and personal care | 13.554 |
| (6) Recreation | 4.136 |
| (7) Education | 24.619 |
| (8) Health | 14.593 |
| (9) Other | 0.445 |
| 2. Investment | 231.254 |
| a. New fixed investment | 156.551 |
| (1) Machinery and equipment | 61.623 |
| (2) Construction and other capital outlays | 93.400 |
| (3) Net additions to livestock | 1.528 |
| b. Capital repair | 43.818 |
| c. Inventory change | 30.885 |
| 3. Other public-sector expenditures | 101.110 |
| a. Government administrative services | 19.098 |
| (1) General agricultural programs | 2.741 |
| (2) Forestry | 1.050 |
| (3) State administration and administration of social organizations | 7.080 |
| (4) Municipal and related services | 8.227 |
| (a) Culture | 2.661 |
| (b) Municipal services | 1.481 |
| (c) Civilian police | 4.085 |
| b. Research and development | 20.234 |
| c. Outlays n.e.c. | 61.778 |
| (1) Net exports | 6.754 |
| (2) Defense n.e.c., unidentified outlays, and statistical discrepancy | 55.024 |
| 4. Gross national product | 713.739 |

**Source Note**: This table combines the household and public-sector outlays derived in tables B-2 and B-4, respectively. Total GNP is equal to the sum of total outlays, excluding transfers, from those tables.

## Appendix C

## Results of Factor Cost Adjustment of 1982 Soviet GNP

This appendix summarizes the results of adjusting 1982 Soviet GNP from established prices to factor cost.

Table C-1 shows the distribution of GNP by type of income—or value added—in established prices among the sectors in which that income originates. The total value of each type of income is from appendix B, table B-5.

Table C-2 presents the results of adjusting these estimates of GNP by sector of origin to factor cost:

- With a few minor exceptions, estimates of the state wage bill, social insurance deductions, other labor income, and depreciation are the same as for GNP in established prices.[1]
- Estimates of profits, indirect taxes, subsidies, and other nonlabor income are subtracted from GNP in established prices, and returns on capital (fixed, working, and unfinished construction) are added back.

Table C-3 shows the distribution of GNP by end use in established prices among the sectors delivering output to the various uses. The total value of each type of end use is from appendix B, table B-6.

Table C-4 presents the results of adjusting these estimates of end-use GNP to factor cost. To calculate this adjustment:

- Indirect taxes and subsidies that fall directly on specific end uses are first subtracted from the affected values in established prices.
- After this preliminary step, the deliveries of each sector to all end-use categories are multiplied by the price ratio implied by the factor cost adjustment of that sector's value added.

[1] The exceptions are that the factor cost adjustment changes the estimates of the wages, social insurance, and other labor income of military personnel and the depreciation estimates for housing, education, health, and science.

## Table C-1
## USSR: GNP by Sector of Origin in Established Prices, 1982

*Billion rubles*

| | State Wage Bill | Social Insurance Deductions | Other Labor Income | Depre-ciation | Profits | Indirect Taxes | Subsidies | Other Nonlabor Income | Total |
|---|---|---|---|---|---|---|---|---|---|
| Industry | 84.852 | 11.033 | 0.127 | 44.463 | 79.502 | 174.158 | −40.348 | 7.709 | 361.496 |
| Ferrous metals | 3.922 | 0.412 | 0.006 | 3.421 | 5.289 | 0.163 | 0.000 | 0.356 | 13.571 |
| Nonferrous metals | 2.476 | 0.260 | 0.004 | 2.410 | 4.748 | 0.133 | 0.000 | 0.225 | 10.256 |
| Fuel | 6.177 | 0.649 | 0.009 | 6.218 | 11.125 | 46.104 | 0.000 | 0.561 | 70.843 |
| Electric power | 1.968 | 0.290 | 0.003 | 4.391 | 5.383 | 1.449 | −0.805 | 0.179 | 12.857 |
| Machinery | 37.646 | 5.541 | 0.056 | 11.048 | 17.833 | 8.582 | −2.300 | 3.420 | 81.826 |
| Chemicals | 4.490 | 0.661 | 0.007 | 4.543 | 4.621 | 3.082 | −1.781 | 0.408 | 16.031 |
| Wood, pulp, and paper | 6.518 | 0.548 | 0.010 | 2.476 | 3.370 | 2.487 | 0.000 | 0.592 | 16.001 |
| Construction materials | 5.825 | 0.374 | 0.009 | 2.822 | 2.008 | 1.863 | 0.000 | 0.529 | 13.428 |
| Light industry | 7.519 | 1.107 | 0.011 | 1.367 | 9.073 | 47.060 | −8.642 | 0.683 | 58.177 |
| Food industry | 6.362 | 0.936 | 0.010 | 3.502 | 8.925 | 61.308 | −26.820 | 0.578 | 54.800 |
| Other industry | 1.950 | 0.253 | 0.003 | 2.267 | 7.126 | 1.928 | 0.000 | 0.177 | 13.706 |
| Construction | 29.450 | 1.889 | 0.875 | 5.744 | 6.655 | 0.619 | 0.000 | 2.676 | 47.908 |
| Agriculture | 20.920 | 2.727 | 61.907 | 16.086 | −0.970 | 10.091 | −3.314 | 1.901 | 109.347 |
| Transportation | 26.904 | 1.980 | 0.040 | 13.326 | 14.625 | 0.777 | 0.000 | 2.444 | 60.096 |
| Communications | 3.009 | 0.221 | 0.005 | 0.886 | 2.423 | 0.077 | −0.915 | 0.273 | 5.979 |
| Trade | 16.830 | 1.239 | 0.025 | 3.402 | 11.860 | 0.425 | −2.400 | 1.529 | 32.911 |
| Services | 61.611 | 4.721 | 9.763 | 6.761 | 4.359 | 1.107 | −7.362 | 2.029 | 82.988 |
| Housing | 3.924 | 0.194 | 2.962 | 3.062 | 0.000 | 0.106 | −4.847 | 0.172 | 5.573 |
| Utilities | 1.336 | 0.066 | 0.002 | 1.354 | 1.267 | 0.053 | 0.000 | 0.058 | 4.137 |
| Repair and personal care | 4.793 | 0.574 | 4.026 | 0.569 | 0.909 | 0.145 | 0.000 | 0.210 | 11.227 |
| Recreation | 2.559 | 0.183 | 1.251 | 0.694 | 1.245 | 0.046 | −2.515 | 0.112 | 3.574 |
| Education | 15.599 | 1.148 | 1.092 | 0.000 | 0.000 | 0.239 | 0.000 | 0.442 | 18.520 |
| Health | 8.478 | 0.624 | 0.424 | 0.000 | 0.000 | 0.128 | 0.000 | 0.240 | 9.894 |
| Science | 10.251 | 0.754 | 0.004 | 0.986 | 0.000 | 0.162 | 0.000 | 0.358 | 12.516 |
| Credit and insurance | 1.370 | 0.101 | 0.002 | 0.096 | 0.938 | 0.034 | 0.000 | 0.060 | 2.600 |
| Government administration | 13.300 | 1.077 | 0.000 | 0.000 | 0.000 | 0.193 | 0.000 | 0.377 | 14.947 |
| General agricultural programs | 1.969 | 0.091 | 0.000 | 0.000 | 0.000 | 0.028 | 0.000 | 0.056 | 2.144 |
| Forestry | 0.754 | 0.035 | 0.000 | 0.000 | 0.000 | 0.011 | 0.000 | 0.021 | 0.821 |
| State administration | 4.962 | 0.365 | 0.000 | 0.000 | 0.000 | 0.072 | 0.000 | 0.140 | 5.540 |
| Culture | 1.865 | 0.137 | 0.000 | 0.000 | 0.000 | 0.027 | 0.000 | 0.053 | 2.082 |
| Municipal services | 1.061 | 0.052 | 0.000 | 0.000 | 0.000 | 0.015 | 0.000 | 0.030 | 1.158 |
| Civilian police | 2.688 | 0.396 | 0.000 | 0.000 | 0.000 | 0.041 | 0.000 | 0.076 | 3.202 |
| Military personnel | 6.590 | 0.000 | 3.510 | 0.000 | 0.000 | 0.132 | 0.000 | 0.000 | 10.232 |
| Other branches | 1.446 | 0.138 | 0.002 | 0.018 | 0.958 | 0.275 | −0.187 | 0.131 | 2.782 |
| Gross national product | 251.611 | 23.947 | 76.255 | 90.685 | 119.413 | 187.662 | −54.526 | 18.692 | 713.739 |

## Table C-2
## USSR: GNP by Sector of Origin at Factor Cost, 1982

*Billion rubles*

| | State Wage Bill | Social Insurance Deductions | Other Labor Income | Depreciation | Returns on Capital | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | | | Fixed | Working | Unfinished Construction | |
| Industry | 84.852 | 11.033 | 0.127 | 44.463 | 45.650 | 17.068 | 6.136 | 209.330 |
| Ferrous metals | 3.922 | 0.412 | 0.006 | 3.421 | 3.433 | 0.836 | 0.512 | 12.543 |
| Nonferrous metals | 2.476 | 0.260 | 0.004 | 2.410 | 2.076 | 0.768 | 0.276 | 8.270 |
| Fuel | 6.177 | 0.649 | 0.009 | 6.218 | 4.902 | 0.614 | 1.402 | 19.972 |
| Electric power | 1.968 | 0.290 | 0.003 | 4.391 | 7.147 | 0.307 | 0.729 | 14.834 |
| Machinery | 37.646 | 5.541 | 0.056 | 11.048 | 11.317 | 6.981 | 1.412 | 74.001 |
| Chemicals | 4.490 | 0.661 | 0.007 | 4.543 | 4.152 | 0.836 | 0.833 | 15.521 |
| Wood, pulp, and paper | 6.518 | 0.548 | 0.010 | 2.476 | 1.952 | 0.802 | 0.211 | 12.517 |
| Construction materials | 5.825 | 0.374 | 0.009 | 2.822 | 2.742 | 0.529 | 0.241 | 12.541 |
| Light industry | 7.519 | 1.107 | 0.011 | 1.367 | 1.874 | 2.253 | 0.116 | 14.246 |
| Food industry | 6.362 | 0.936 | 0.010 | 3.502 | 3.053 | 2.458 | 0.251 | 16.571 |
| Other industry | 1.950 | 0.253 | 0.003 | 2.267 | 3.004 | 0.683 | 0.153 | 8.314 |
| Construction | 29.450 | 1.889 | 0.875 | 5.744 | 4.073 | 8.284 | 0.308 | 50.621 |
| Agriculture | 20.920 | 2.727 | 61.907 | 16.086 | 24.676 | 5.249 | 1.864 | 133.429 |
| Transportation | 26.904 | 1.980 | 0.040 | 13.326 | 17.314 | 0.762 | 1.308 | 61.634 |
| Communications | 3.009 | 0.221 | 0.005 | 0.886 | 1.336 | 0.108 | 0.101 | 5.665 |
| Trade | 16.830 | 1.239 | 0.025 | 3.402 | 5.914 | 14.025 | 0.447 | 41.882 |
| Services | 61.611 | 4.721 | 9.763 | 20.672 | 30.366 | 1.490 | 1.511 | 130.134 |
| Housing | 3.924 | 0.194 | 2.962 | 10.799 | 16.198 | 0.795 | 0.806 | 35.677 |
| Utilities | 1.336 | 0.066 | 0.002 | 1.354 | 5.194 | 0.255 | 0.258 | 8.465 |
| Repair and personal care | 4.793 | 0.574 | 4.026 | 0.569 | 0.491 | 0.024 | 0.024 | 10.502 |
| Recreation | 2.559 | 0.183 | 1.251 | 0.694 | 1.732 | 0.085 | 0.086 | 6.589 |
| Education | 15.599 | 1.148 | 1.092 | 3.621 | 3.258 | 0.160 | 0.162 | 25.040 |
| Health | 8.478 | 0.624 | 0.424 | 2.035 | 1.831 | 0.090 | 0.091 | 13.573 |
| Science | 10.251 | 0.754 | 0.004 | 1.506 | 1.355 | 0.066 | 0.067 | 14.005 |
| Credit and insurance | 1.370 | 0.101 | 0.002 | 0.096 | 0.308 | 0.015 | 0.015 | 1.907 |
| Government administration | 13.300 | 1.077 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 14.376 |
| General agricultural programs | 1.969 | 0.091 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.060 |
| Forestry | 0.754 | 0.035 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.789 |
| State administration | 4.962 | 0.365 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 5.328 |
| Culture | 1.865 | 0.137 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.002 |
| Municipal services | 1.061 | 0.052 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.113 |
| Civilian police | 2.688 | 0.396 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 3.084 |
| Military personnel | 10.153 | 0.966 | 1.160 | 0.000 | 0.000 | 0.000 | 0.000 | 12.279 |
| Other branches | 1.446 | 0.138 | 0.002 | 0.018 | 0.086 | 0.004 | 0.007 | 1.702 |
| Gross national product | 255.173 | 24.913 | 73.905 | 104.597 | 129.416 | 46.990 | 11.681 | 646.676 |

## Table C-3
## USSR: GNP by End Use in Established Prices, 1982

*Billion rubles*

| | Consumption | | Investment | Government Administration | Research and Development | Exports | Imports |
|---|---|---|---|---|---|---|---|
| | Goods | Services | | | | | |
| Industry | 248.612 | 0 | 83.741 | 0 | 0 | 62.479 | −49.443 |
| Ferrous metals | 0 | 0 | 2.054 | 0 | 0 | 3.499 | −6.369 |
| Nonferrous metals | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fuel | 2.698 | 0 | 0 | 0 | 0 | 32.490 | −2.481 |
| Electric power | 0 | 0 | 0 | 0 | 0 | .545 | −.056 |
| Machinery | 22.359 | 0 | 77.579 | 0 | 0 | 18.899 | −20.991 |
| Chemicals | 4.883 | 0 | 2.054 | 0 | 0 | 2.348 | −4.172 |
| Wood, pulp, and paper | 6.423 | 0 | 2.054 | 0 | 0 | 1.908 | −1.521 |
| Construction materials | 3.054 | 0 | 0 | 0 | 0 | .459 | −.659 |
| Light industry | 68.258 | 0 | 0 | 0 | 0 | 1.253 | −5.377 |
| Food industry | 135.192 | 0 | 0 | 0 | 0 | .726 | −7.513 |
| Other industry | 5.745 | 0 | 0 | 0 | 0 | .352 | −.304 |
| Construction | 0 | 0 | 115.100 | 0 | 0 | 0 | 0 |
| Agriculture | 45.949 | 0 | 1.528 | 0 | 0 | .470 | −6.869 |
| Transportation | 0 | 10.745 | 0 | 0 | 0 | 0 | 0 |
| Communications | 0 | 2.725 | 0 | 0 | 0 | 0 | 0 |
| Trade | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Services | 0 | 69.354 | 0 | 19.098 | 20.234 | 0 | 0 |
| Housing | 0 | 6.080 | 0 | 0 | 0 | 0 | 0 |
| Utilities | 0 | 6.372 | 0 | 0 | 0 | 0 | 0 |
| Repair and personal care | 0 | 13.554 | 0 | 0 | 0 | 0 | 0 |
| Recreation | 0 | 4.136 | 0 | 0 | 0 | 0 | 0 |
| Education | 0 | 24.619 | 0 | 0 | 0 | 0 | 0 |
| Health | 0 | 14.593 | 0 | 0 | 0 | 0 | 0 |
| Science | 0 | 0 | 0 | 0 | 20.234 | 0 | 0 |
| Credit and insurance | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Government administration | 0 | 0 | 0 | 19.098 | 0 | 0 | 0 |
| General agricultural programs | 0 | 0 | 0 | 2.741 | 0 | 0 | 0 |
| Forestry | 0 | 0 | 0 | 1.050 | 0 | 0 | 0 |
| State administration | 0 | 0 | 0 | 7.080 | 0 | 0 | 0 |
| Culture | 0 | 0 | 0 | 2.661 | 0 | 0 | 0 |
| Municipal services | 0 | 0 | 0 | 1.481 | 0 | 0 | 0 |
| Civilian police | 0 | 0 | 0 | 4.085 | 0 | 0 | 0 |
| Military personnel | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other branches | 3.545 | 0 | 0 | 0 | 0 | −.216 | −.099 |
| Gross national product | 298.106 | 82.824 | 200.369 | 19.098 | 20.234 | 63.165 | −56.411 |

## Table C-4

## USSR: GNP by End Use at Factor Cost, 1982

*Billion rubles*

| | Consumption | | Investment | Government Administration | Research and Development | Exports | Imports |
|---|---|---|---|---|---|---|---|
| | Goods | Services | | | | | |
| Industry | 169.467 | 0 | 80.406 | 0 | 0 | 40.585 | −44.442 |
| Ferrous metals | 0 | 0 | 1.688 | 0 | 0 | 3.504 | −5.399 |
| Nonferrous metals | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fuel | .932 | 0 | 0 | 0 | 0 | 4.326 | −1.343 |
| Electric power | 0 | 0 | 0 | 0 | 0 | .213 | −.048 |
| Machinery | 10.873 | 0 | 75.006 | 0 | 0 | 21.743 | −19.711 |
| Chemicals | 3.107 | 0 | 1.932 | 0 | 0 | 2.829 | −3.924 |
| Wood, pulp, and paper | 4.946 | 0 | 1.780 | 0 | 0 | 1.480 | −1.318 |
| Construction materials | 2.543 | 0 | 0 | 0 | 0 | .433 | −.592 |
| Light industry | 32.851 | 0 | 0 | 0 | 0 | 2.661 | −3.788 |
| Food industry | 110.840 | 0 | 0 | 0 | 0 | 2.208 | −8.010 |
| Other industry | 3.374 | 0 | 0 | 0 | 0 | 1.188 | −.309 |
| Construction | 0 | 0 | 114.444 | 0 | 0 | 0 | 0 |
| Agriculture | 52.559 | 0 | 1.818 | 0 | 0 | .857 | −8.175 |
| Transportation | 0 | 10.670 | 0 | 0 | 0 | 0 | 0 |
| Communications | 0 | 2.706 | 0 | 0 | 0 | 0 | 0 |
| Trade | 2.633 | 0 | 0 | 0 | 0 | 0 | 0 |
| Services | 0 | 116.274 | 0 | 18.528 | 21.724 | 0 | 0 |
| Housing | 0 | 36.184 | 0 | 0 | 0 | 0 | 0 |
| Utilities | 0 | 10.700 | 0 | 0 | 0 | 0 | 0 |
| Repair and personal care | 0 | 12.829 | 0 | 0 | 0 | 0 | 0 |
| Recreation | 0 | 7.150 | 0 | 0 | 0 | 0 | 0 |
| Education | 0 | 31.139 | 0 | 0 | 0 | 0 | 0 |
| Health | 0 | 18.272 | 0 | 0 | 0 | 0 | 0 |
| Science | 0 | 0 | 0 | 0 | 21.724 | 0 | 0 |
| Credit and insurance | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Government administration | 0 | 0 | 0 | 18.528 | 0 | 0 | 0 |
| General agricultural programs | 0 | 0 | 0 | 2.658 | 0 | 0 | 0 |
| Forestry | 0 | 0 | 0 | 1.018 | 0 | 0 | 0 |
| State administration | 0 | 0 | 0 | 6.867 | 0 | 0 | 0 |
| Culture | 0 | 0 | 0 | 2.581 | 0 | 0 | 0 |
| Municipal services | 0 | 0 | 0 | 1.436 | 0 | 0 | 0 |
| Civilian police | 0 | 0 | 0 | 3.968 | 0 | 0 | 0 |
| Military personnel | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other branches | 3.147 | 0 | 0 | 0 | 0 | .155 | −.088 |
| Gross national product | 227.806 | 129.650 | 196.668 | 18.528 | 21.724 | 41.597 | −52.704 |